2017

Strategies for Exploring: ACAT III Requirement Approval Process

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This is to certify that the doctoral study by

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has been found to be complete and satisfactory in all respects,
and that any and all revisions required by
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Abstract

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MBA, Clemson University, 1993

BBA, University of Georgia, 1979

Doctoral Study Submitted in Partial Fulfillment

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Abstract

The United States Congress mandated the Secretary of Defense develop a strategy to streamline the joint capabilities integrated development system (JCIDS). The purpose of this qualitative single case study was to explore strategies that senior U.S. Army Commanders might use to reduce the approval time for an acquisition category (ACAT) III need document in the JCIDS. Data came from historical documents and semistructured interviews of 30 ACAT III requirement writers and senior U.S. Army commanders with expertise in JCIDS. The conceptual framework was Goldratt's theory of constraints. Miles, Huberman, and Saldana's data analysis method was used to identify themes. Six themes emerged that yielded 6 possible strategies to reduce approval time: (a) define and implement an objective goal, (b) simplify the process and decrease redundancy by reducing or eliminating irrelevant levels of review, (c) determine the optimum number of reviews necessary for the desired outcome, (d) determine if the Chief of Staff of the Army should be the approving authority for an ACAT III need document, (e) determine the appropriate offices and individuals that should be consulted about the need document during the world wide review process, and (f) enhance training for JCIDS personnel participating in the ACAT III need approval process. The study findings may contribute to positive organizational and social change by potentially saving U.S. taxpayer funding and by enhancing the combat efficiency of the U.S. Army, thereby increasing the safety and security of the United States and its citizens.

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Dedication

To my wife, Amy, who has been supportive in many ways throughout this journey. Her unselfishness, faith, and understanding were paramount to my completion of this doctoral program. I thanked her every day for her support. To my grandparents, Ruby and Dan Hatfield, who instilled in me that education is the key to success.

Acknowledgments

I would like to acknowledge Drs. Doug Campbell, Yvonne Doll, Freda Turner, and James Savard for their guidance and patience in support of this journey. I would like to thank Stacy Harn and Laura Mullins for their assistance in tracking down articles and books for this study. I would also like to thank Lynda Wright who provided me with the funding path to make this journey possible. I would like to thank Gabrielle Heinzmann and John Pine who provided suggestions for the study. Most of all, I would like to thank my employer, family, classmates and everyone who participated in the study for their support.

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Section 1 Foundation of the Study

Department of Defense (DOD) personnel develop equipment needs and use the U.S. government acquisition system to make purchases (Sullivan, 2013b March). In this study, I explored the DOD needs approval process called the Joint Capabilities Integrated Development System ([JCIDS]; 2015). The exploration of the JCIDS process through the theory of constraints may provide senior U.S. Army Commanders with strategies they can use to reduce the JCIDS approval time of an ACAT III military need.

Background of the Problem

In 2014, the members of the U.S. Senate and House of Representatives Armed Services Committees jointly wrote a letter to L. Farrell, president and CEO of the National Defense Industrial Association (NDIA), asking for suggestions on how to improve the DOD acquisition system (Williams, 2014). In 2015, a Government Accountability Office (GAO) report again identified the length of time of the acquisition requirement approval process and the inability to produce products using current technology as major constraints on military project management efficiency (Sullivan, 2015d March). The JCIDS timeline for approval of an ACAT document is 337 days (Pendleton, 2012; JCIDS, 2015). Sullivan, in the GAO report, suggested that a review be conducted of the JCIDS process. In November 2015, Congressional leaders approved the National Defense Authorization Act. Section 810 of the Act requires the Secretary of Defense and the chair of the Joint Chiefs of Staff to review the JCIDS approval process to establish a streamlined process to develop needs for acquisition programs (NDAA, 2015).

Problem Statement

DOD acquisitions have delivery times that are two to three times longer than that of corporations (Sullivan, 2015c February). The range of time for delivering a DOD technological acquisition is 72-90 months, yet technology typically changes every 14-18 months (Schwartz, 2014). The general business problem is that ACAT III equipment capabilities continue to be two to three generations behind available technology, which creates operational inefficiencies. The specific business problem is that senior U.S. Army Commanders lack strategies for reducing the JCIDS approval time of 337 days for an ACAT III military need (Sullivan, 2015e June).

Purpose Statement

The purpose of this qualitative descriptive single case study was to explore strategies that senior U.S. Army Commanders might use to reduce the JCIDS approval time for ACAT III military needs. I collected data by conducting interviews and analyzing current and historical ACAT III documents, which I obtained from requirement writers and senior U.S. Army Commanders located at Fort Benning, Georgia; Fort Eustis, Virginia; and MacDill AFB, Florida. This research may affect social change by enhancing the safety of U.S. citizens through increased DOD warfighting efficiency as well as possibly reducing the burden on taxpayers through reduction of administrative costs.

Nature of the Study

I used the qualitative methodology for this study. The purpose of using a qualitative method is to gain a better understanding of a phenomenon by asking open-

ended questions of what, how, and why (Yin, 2014). The qualitative methodology is most appropriate for the exploration of strategies of an existing process (Sikahala, 2014). In contrast to a qualitative methodology, a quantitative methodology enables researchers to examine the differences and relationships among variables (Bernard, 2012).

My focus in this study was not to systematically analyze relationships between variables or develop measurements. Instead, it was to explore in depth the strategies that U.S. Army Commanders might potentially use to increase organizational efficiency. Therefore, I determined that using quantitative methodology would not be appropriate. Mixed method methodology combines quantitative and qualitative methodologies (Bernard, 2012). My decision not to use a quantitative approach meant that a mixed methods approach would not be appropriate. The qualitative method was most appropriate for this study because it allowed me to explore the JCIDS approval process in depth. I conducted semistructured interviews with participants within their work locations following guidelines by Fink (2014), Sikahala (2014), and Yin (2014).

I used a descriptive single case study design for this study. A descriptive single case study design allows for exploration of an existing process through on-site data source triangulation (Yin, 2014). The single case study design was appropriate because this study's research will come from multiple sources including semistructured interviews and review of current and historical documents. Using a case study design allows a researcher to focus on a phenomenon and retain a real world perspective in studying an organizational process such as the JCIDS approval process (Yin, 2014).

In contrast to a case study, a narrative design allows a researcher to tell a story (Lewis, 2015). I did not explore the JCIDS process in an effort to tell a story. Therefore, I determined that a narrative design would not be appropriate. The purpose of using an ethnographic design is to explain a cultural phenomenon (McNabb, 2015). My study explored strategies of the JCIDS process that is not a cultural phenomenon. Therefore, the use of the ethnography design is not appropriate. Researchers use a phenomenological design to identify a lived experience rooted in a philosophy (Lewis, 2015). This study explored an existing organizational process. Accordingly, using a phenomenological design is not appropriate. Marshall and Rossman (2016) contend that using grounded theory requires a study to conduct a theory. They suggest that use of a grounded theory design requires objective measurable data focused on a social process. The grounded theory is not appropriate because I did not develop a theory.

Research Question

The primary research question was, what are strategies senior U.S. Army Commanders might use to reduce the JCIDS approval time for an ACAT III military need? Drawing from Goldratt and Cox's (1984) theory of constraints as the studies conceptual framework, there are two secondary research questions:

RQ1. What are the functions within the JCIDS process that may be a constraint by adding time to the ACAT III approval process?

RQ2. What are the strategies that may be used to address possible constraints by reducing the time of the ACAT III approval process?

Interview Questions

1. What are the principle constraints that add time to the current JCIDS process for an ACAT III needs approval?
2. What are the current strategies used by senior U.S. Army Commanders to obtain a JCIDS ACAT III needs approval as quickly as possible?
3. What strategies might senior U.S. Army Commanders use to reduce the time of a JCIDS ACAT III needs approval?
4. What other areas of the JCIDS ACAT III process would you address that may reduce the time of an ACAT III needs approval?

Conceptual Framework

I explored the JCIDS process through the theory of constraints (TOC). Using the theory of constraints may allow for possible explanations of a phenomenon by asking a series of questions and answers (Goldratt & Cox, 2014). Goldratt defined the theory of constraints in 1984 (Goldratt & Cox, 1984). TOC has as a core concept that any process or system that fails to achieve maximum efficiency or effectiveness due to inherent constraints (Goldratt & Cox, 2014). A constraint limits process throughput (Goldratt, 1990). Exploration of those constraints may provide a strategy that may streamline and generate faster throughput in an organization (Goldratt & Cox, 2014). In this study, I explored strategies that senior U.S. Army Commanders might use that may reduce the JCIDS approval time of an ACAT III military need.

Operational Definitions

Acquisition Category I (ACAT I): ACAT I programs are Major Defense Acquisition Programs (MDAP) with a procurement of more than $2.79B. Platforms such as jets, ships, and tanks are ACAT I programs (Sullivan, 2014b March).

Acquisition Category III (ACAT III): ACAT III programs have procurement criteria that is less than that of ACAT I and II programs (Gass, 2012).

Acquisition Category (ACAT) document: An ACAT document is a Capability Development Document (CDD), a Capability Production Document (CPD), an Operation Needs Statement (ONS), or any document used as a request the acquisition of a need or a capability (JCIDS, 2015).

Combat multiplier: A combat multiplier is a device or capability that provides a U.S. Warfighter with a distinct advantage over the enemy (Hunter, 2004).

JCIDS: The process that DOD acquisition personnel use to identify, assess, and prioritize the development of a military need (JCIDS, 2015).

Maneuver Center of Excellence (MCoE): MCoE is a military organization that represents all of the Centers of Excellence and whose mission is to develop needs, requirements, capabilities, and specific courses of instruction for the U.S. Army Armor and Infantry branches (Sullivan, 2012 March).

Requirement writer: Personnel within the U.S. Army who develop ACAT program need documents for approval through the JCIDS process (JCIDS, 2015).

Assumptions, Limitations, and Delimitations

Assumptions

An assumption occurs when one estimates an event conclusion based on available evidence without witnessing the actual event (Chadha, 2013). In conducting this study, I assumed that my study sites (Fort Benning and Fort Eustis and MacDill AFB) were reasonably representative of all similar DOD locations. The JCIDS process has at least one constraint. The evidence collected from the sample of selected participants, of current programs, and of historical programs is reasonably representative of the information found across all of DOD.

Limitations

A limitation is not factoring in the complete set of known entities to ensure total confidence of the results (Marshall & Rossman, 2016). This study has the following limitations: The research locations are limited to Ft. Benning, Georgia, Ft. Eustis, VA, and MacDill, Florida. Exploring strategies for senior Army Commanders of the JCIDS process has limitations based on the application and philosophies defined within the theory of constraints.

Delimitations

Delimitation is how a study is narrow in scope by not addressing all facets of the subject matter and framing the study for specific research (Marshall & Rossman, 2016). The scope of this study was restricted exploring strategies associated with ACAT III needs approvals within the JCIDS approval process. The target population will consist of over 1,000 requirement writers and senior U.S. Army Commanders.

Significance of the Study

Contribution to Business Practice

I sought to address a gap in DOD acquisition reform by using TOC (Goldratt & Cox, 2014) to explore strategies of the JCIDS process for an ACAT III approval. Senior U.S. Army Commanders may be able to use the findings of this study to reduce the amount of time needed for an ACAT III needs approval, increase personnel capability in developing an ACAT III needs approval, and reduce ACAT III program lifecycle costs when fielding products with current technology (Sullivan, 2015a). U.S. Senior Army Commanders may increase battlefield efficiency by delivering products that use current technology (Kendall, 2014). Private corporations may reduce costs through reduced investments in research development when producing products with current technology (Sullivan, 2015b).

Implications for Social Change

Social change may occur through enhanced protection of U.S. citizens due to increased battlefield efficiencies. U.S. taxpayers may benefit from a reduction of military funding required by the government (Sullivan, 2014c April). U.S. citizens may also benefit from an increase in the number of jobs available when private corporations have increased funds because of reduced investments in outdated technology.

Review of Professional and Academic Literature

Narrative

This literature review draws from relevant multiple year GAO reports authored by department personnel (Francis, 2012; Khan, 2014; Mackin, 2015; Pendleton, 2012;

Powner, 2015; Sullivan, 2012-2016). In addition, authoritative military manuals from the Chairman of the Joint Chiefs of Staff Instruction (CJCSI) and the JCIDS regulation were used to illustrate and explain the JCIDS process. Additionally, I drew from seminal and authoritative books, peer-review publications, and journal articles to address the relevance of specific theories that senior U.S. Army Commanders may use to explore strategies on the JCIDS process. Sources contain information from relevant theories and applications such as TOC, total quality management, business process improvement, and Six Sigma. This literature review contains 249 citations from a total of 107 references. Because certain types of government material were required for this study, more than 15% of the references are more than 5 years old.

The organization of this literature review consists of four main parts. The first part consists of relevant information from government publications and regulations about the JCIDS process ending with a synthesis of the relevant information. The second part includes a review, comparison, and synthesis of relevant theories concluding with the reasoning behind my use of operative theory. The third part includes relevant nongovernment publications that address industry problems using the operative theory. The final part includes a synthesis of the complete literature review and transition to Section 2.

My strategy included researching relevant publications in the libraries of Walden University, USSOCOM, and Congress as well as Internet-accessible databases. The key word searches included DOD acquisition, JCIDS process, total quality management (TQM), Six Sigma, and business process improvement (BPI). I investigated the concepts

of TQM, Six Sigma, BPI, and TOC because the focus of each of these theories is to increase the efficiency of a process within an organization. My challenge in reviewing and analyzing academic literature regarding the JCIDS approval process is that I could find no relevant peer-reviewed publications that address the activities and functions of the JCIDS approval process. However, peer-reviewed publications exist on similar Federal Drug Administration (FDA) approval process as well as on DOD acquisition and contracting.

The JCIDS Process: Component of the DOD Acquisition System

DOD acquisition is a complex system of systems that includes but is not limited to the defense acquisition system (DAS), joint operation planning and execution system (JOPES), planning programming budgeting and execution system (PPBES), and JCIDS (CJCSI, 2015). Worger, Jalao, Writhlin, Colombi, and Wu (2014) found that JCIDS, DAS, and JOPES are actually processes as opposed to systems within the DOD acquisition system (see Figure 1).

JCIDS as a component of the total DOD acquisition system

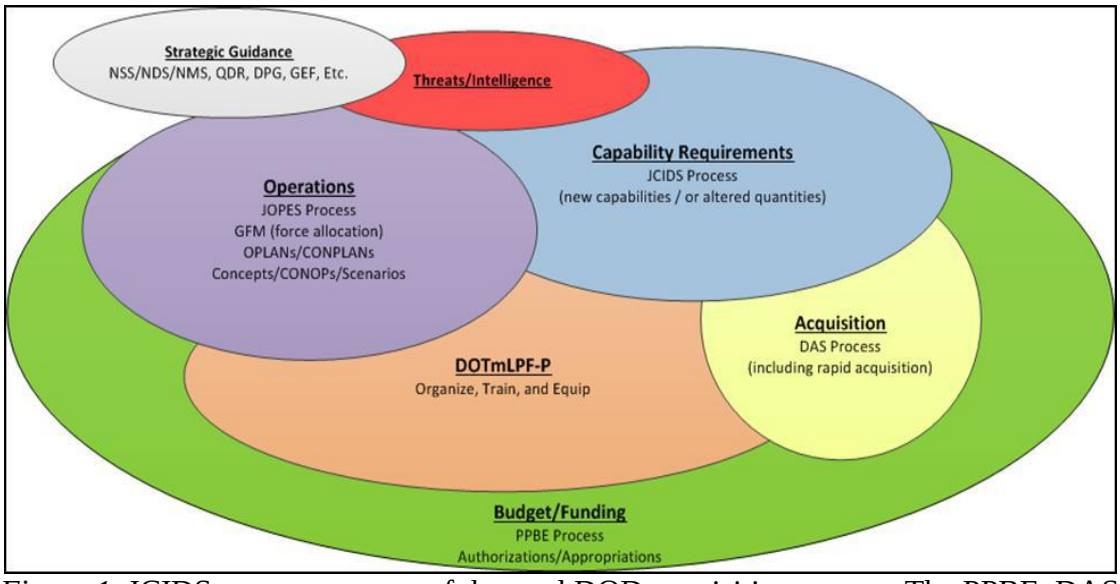

Figure 1. JCIDS as a component of the total DOD acquisition system. The PPBE, DAS, JOPES and JCIDS processes are interdependent. The DOTmLPF-P functions are in all ACAT programs. All ACAT programs address threats identified through strategic guidance. Identified from U.S. Chairman of Joint Chiefs of Staff, *Chairman of the Joints Chiefs of Staff Instruction,* (CJCSI, 2015), 3170.01I, 2015, p. A9. No copyright.

Schwartz (2013) found that the DOD's acquisition program lifecycle includes requirements, engineering, construction, development, sustainment, and disposal of products or capabilities. Cilli, Parnell, Cloutier, and Zigh (2015) found increased emphasis on systems engineering early in the lifecycle to ensure realistic program baselines are established. Consequently, U.S. Army acquisition personnel use the JCIDS process to identify, assess, prioritize, and approve military requirements (see Figure 2).

Complete JCIDS process

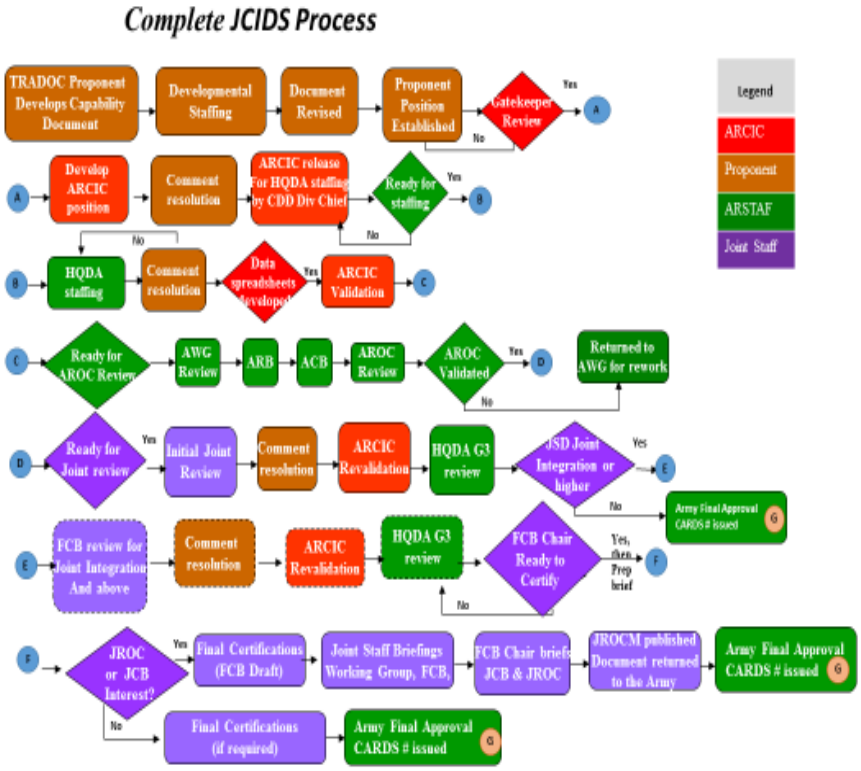

Figure 2. Defines all the staffing required for ACAT documents. Process ending in A is providing an ACAT document to ARCIC for review. Process A to B shows ARCICs approval process. Process B-C shows ARCIC staffing through Headquarters Department of the Army (DA). Process C-D shows ARCIC staffing through the Army Requirements Oversight Council (AROC). Process D-G shows ARCIC staffing through Joint Requirements Oversight Council (JROC) (ARCIC, 2016). By U.S. Department of the Army, Army Capabilities Integration Center, *Complete JCIDS Process,* 2016. No copyright.

Similarly, Beers and Karst (2016) found that FDA has a comparable process for drug approval. One purpose of the Goldwater-Nichols Act of 1986 was to allow DOD leadership to separate development of requirements and contracting into different organizations. Consequently, in 1986, the U.S. Secretary of Defense established the Joint Requirements Oversight Council (JROC) (Goldwater-Nichols, 1986). The military

members of the JROC oversee the management of acquisitions for joint operations (Liu, Liu, Xu, & Zhang, 2012).

It was not until 2003 that the Chairman of the Joint Chiefs of Staff (CJCS) approved the JCIDS process, CJCS Manual 3170.01, to allow members of the JROC to address specific acquisitions that may resolve the lack of interoperability between products across the different military branches of DOD (CJCSM, 2004). Sullivan (2015a) found that the service chiefs of the Army, Navy, and Air Force disliked the approval process for ACAT III programs due to their lengthy approval timeframes.

Congress approved DOD acquisition reforms such as the Weapon Systems Acquisition Reform Act of 2009 to address acquisition processes and functions. However, Sullivan (2014b, March) noted that those reforms had minimal success in reducing the delivery times of programs using the JCIDS and DOD acquisition systems. According to Pendleton (2012), DOD officials acknowledged that the JCIDS process was not affective in providing senior military leadership the ability to approve a joint military services requirement in less than 6 months. Accordingly, Sullivan (2014b March) stated that DOD faces four challenges to improving efficiency of the DOD acquisition system. The challenges are organizational constraints within the JCIDS process, insufficient guidance on cost estimating, designed process to capture lessons learned, and cultural barriers between Office of the Secretary of Defense and the military services (Sullivan, 2014b March).

Alic (2013) found that the DOD acquisition system lacked an effective JCIDS requirement process, a knowledgeable acquisition workforce, and key acquisition

processes. Additionally, Sullivan (2015b, March) stated that addressing the JCIDS process is important to increasing efficiency of the DOD acquisition system. Sullivan explained how important it is for military Commanders at the Centers of Excellence (CoE) and Army Capabilities Integration Center (ARCIC) to establish a DOD organizational goal before any changes are made to the JCIDS process.

Each CoE Commander is responsible for developing ACAT documents for approval (JCIDS, 2015). An ACAT document includes the listing of required and desired capabilities that a product must accomplish to perform a military need. Additionally, the Commander of ARCIC is responsible for the flow of ACAT documents through the complete JCIDS process (see Figure 2). The complete JCIDS process includes the efforts represented in Figure 3. Accordingly, the enclosures outline the activities of government personnel at the CoEs and ARCIC to generate and move ACAT documents through one of the JCIDS approval processes (see Figure 3; JCIDS, 2015).

Manual Enclosure A denotes that government personnel, requirement writers, and military personnel at the CoEs and ARCIC obtain Defense Acquisition Workforce Improvement Act (DAWIA) certification (CJCSI, 2015). The DAWIA certification is a level II or higher completion of the project management course taught by professionals within the Defense Acquisition University (DAU) under the authorization of DAWIA (DAWIA, 2012). The purpose of this course is to enhance the knowledge and ability of CoE and ARCIC personnel to develop and move an ACAT program document through the JCIDS process (JCIDS, 2015).

JCIDS overview flow from requirement generation

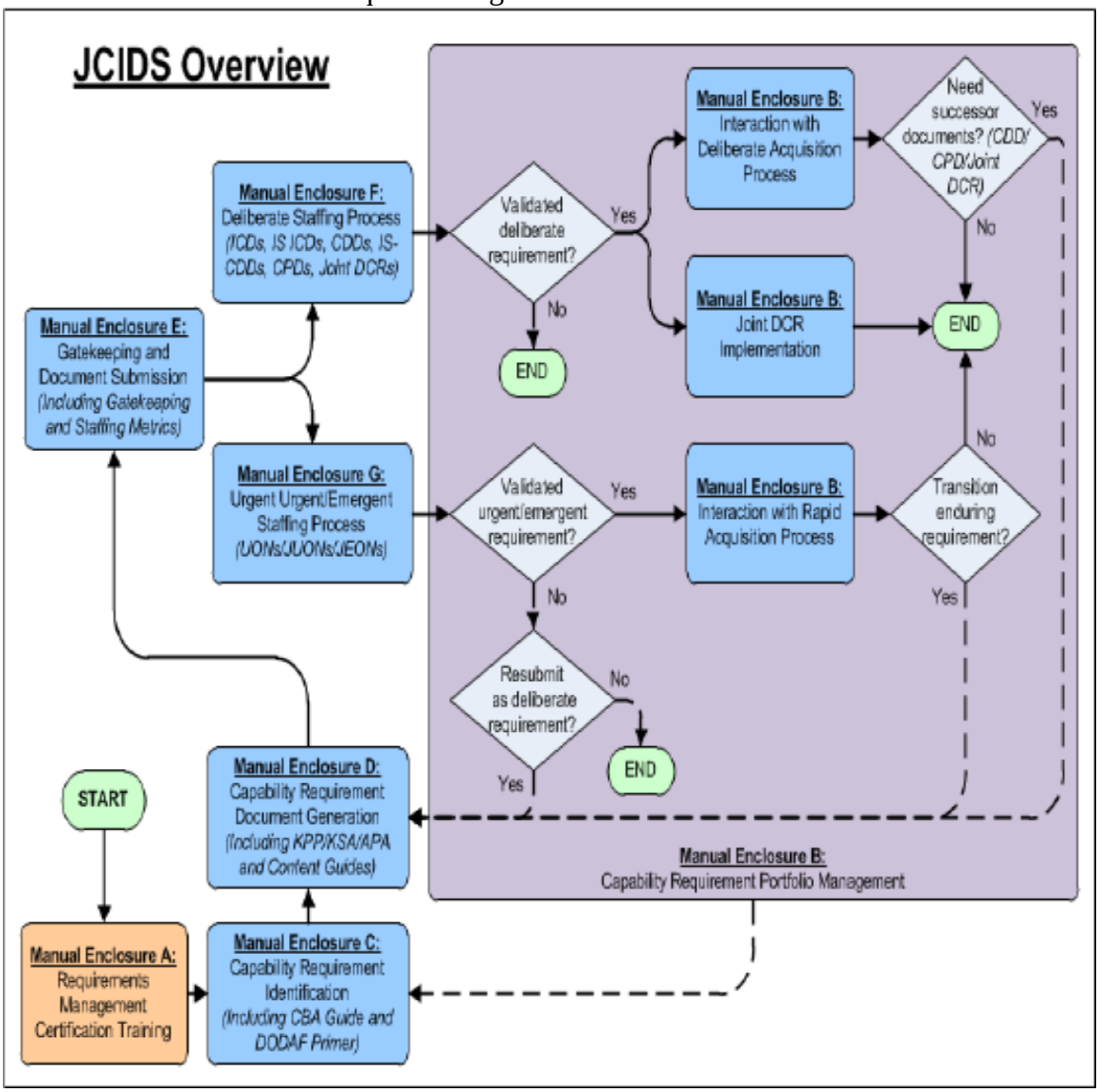

Figure 3. Defining the initial JCIDS Document Approval steps monitored through ARCIC. Process starts with Manual Enclosure A. Manual Enclosures B and C are the decision activities conducted at the CoEs as to which document and process to use. Manual Enclosure D activities conducted at the CoEs with the output sent to Manual Enclosure E, ARCIC Gatekeeper. The process ends with Manual Enclosures F or G activities conducted by the ARCIC gatekeeper. Identified from the U.S. Chairman of the Joint Chiefs of Staff, *Chairman of the Joint Chiefs of Staff Instruction,* 3170.01I, 2015, p. A2. No copyright.

Macaulay (2012) suggested that MCoE use different approaches to generate an ACAT program document. Additionally, one of the most important ingredients in

generating an ACAT program document is the understanding of the JCIDS approval process by the requirement writer. Therefore, a requirement writer should learn the three key parts of a requirement; elicitation, triage, and specification.

Manual Enclosures B and C (see Figure 3) show how senior U.S. Army Commanders identify a need for a new capability based on the current military threat and concept of operations (CJCSI, 2015). Requirement writers within one of five CoEs located on five forts across the United States receive a need for a new capability from senior Army Commanders. The new capability addresses a gap in an ability to accomplish a military mission. , the requirement writers generate a capability based assessment (CBA) document that identifies a possible product solution to accomplish that military mission for approval by senior U.S. Army Commanders. A CBA document includes the DOD architecture framework (DODAF), purpose, function, and estimated cost of that capability (Hughes & Andreas, 2013). Consequently, the use of the CBA provides an objective way to identify a capability requirement associated with an approved capability gap prior to development and submission of an ACAT document for review and validation (JCIDS, 2015). In addition, the CoE personnel use the CBA to determine whether that needed capability is available for purchase though a rapid acquisition process (JCIDS, 2015). However, if the capability is not available for purchase, CoE personnel will generate an ACAT program document for approval through the JCIDS process (JCIDS, 2015). Similarly, Basu, and Hassenplug (2012) discovered the pathway for a new medical device begins with a development of a capability document along with an application to the FDA.

Sullivan (2015a) confirmed that three ACAT levels of programs exist. Sullivan suggested that the ACAT levels are determined based on the amount of procurement dollars required. Specifically, Sullivan stated that 79 ACAT I level programs are Major Defense Acquisition Programs (MDAP) such as F35 Jet Fighter and M109A7 Self-Propelled Howitzer with planned procurement of more than $2.79 billion dollars. Sullivan explained that ACAT II level programs do not meet ACAT I MDAP criteria. Sullivan further explained that ACAT II level programs have more than $835 million dollars of estimated procurement. Sullivan (2015a) found that the majority of the programs are ACAT III level programs such as boots, uniforms, radios, computers, and sensors. Sullivan explained that all programs that do not meet ACAT II or ACAT I criteria are ACAT III level programs. Regardless of the level, all ACAT documents flow through the JCIDS approval process (JCIDS, 2015).

Manual Enclosure D (see Figure 3) lists the different types of ACAT III documents (see Figure 4) used to articulate capability requirements for review and approval (JCIDS, 2015). Requirement writers along with military personnel within the CoEs develop and submit ACAT III documents to personnel at ARCIC that will move the documents through the JCIDS process (JCIDS, 2015). The Maneuver Center of Excellence (MCoE) at Fort Benning and the United States Special Operations Command (USSOCOM) at MacDill AFB are two of the organizations where requirement writers develop and submit ACAT III documents for approval (CJCSI, 2015).

A requirement writer within a CoE has latitude in selecting a type of ACAT III document to write (see Figure 4) (DoDI, 2015). He or she can use an initial capabilities

document (ICD) with an analysis of alternatives (AoA) document to show an existing product with alternatives to achieve the needed capability. The requirement

Interaction between the requirement generation and acquisition process

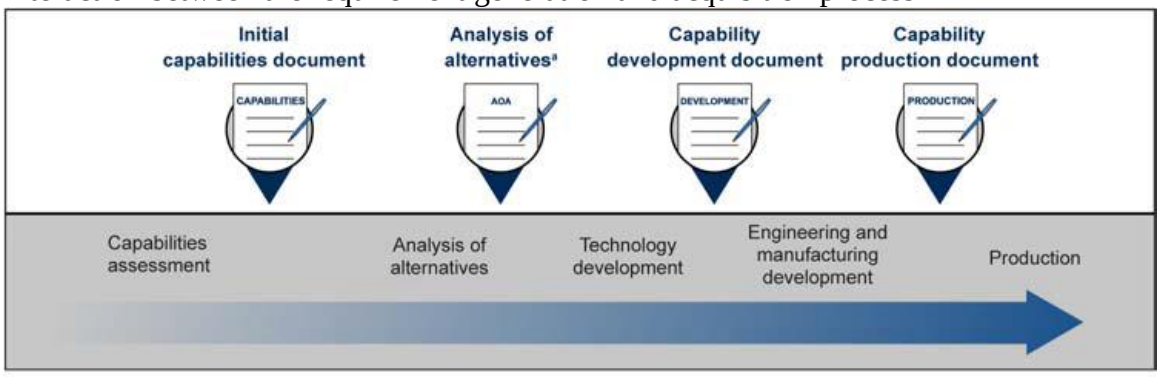

Figure 4. JCIDS different acceptable requirement documents. An ICD and AoA define a capability and different alternatives to obtain that capability. The CDD and CPD are documents developed within the CoEs to identify the need and request production of that need. Each document as to value and purpose identified by U.S. Government Accountability Office: *Defense management: Guidance and progress measures needed to realize benefits from changes in DOD's joint requirements process*, GAO-12-339, 2012, p. 6. No copyright.

writer develops a capabilities development document (CDD) or a capabilities production document (CPD) to provide the requirements to a program manager with a DOD contracting organization such as the Program Executive Office – Soldier (JCIDS, 2015). Pendleton (2012) found that a requirement writer regardless of the ACAT level program continued to decide what document to use and how to present that document based on his or her understanding of the needed capability. In addition, Klyatis (2013) suggested that personnel in research and development usually prefer traditional ways of representing data and are not willing to create ACAT III documents outside of the norm. The two types of ACAT III documents that have long approval times using the deliberate JCIDS

process are Capabilities Development Documents (CDD) and Capabilities Production Document (CPD; JCIDS, 2015).

Pendleton (2012) stated that if the capability requested is not commercially available but current technology exists to produce that capability, a requirement writer generates a Capabilities Development Document (CDD) (JCIDS, 2015). Additionally, a CDD identifies specifications, key performance parameters (KPP), and key system attributes (KSA) required of the approved capability (see Figure 4). A KPP is a mandatory attribute that the requested capability must have (JCIDS, 2015). For example, a radio may have a KPP that must operate on battery power for 10 hours. A KSA is an important attribute that the capability should have (JCIDS, 2015). For example, a radio may have a KSA that should have the ability to operate on battery power for 16 hours. In addition, Pendleton noted that a CDD might take six to eight months to write, depending on the complexity of the capability requested.

Pendleton (2012) stated that a requirement writer of the CoEs could use a Capability Production Document (CPD) as opposed to a Capability Development Document (CDD) (see Figure 4) when the production capability already exists for that product. Ibarra (2013) suggested that the requirement writer should consider the risk of program completion when making the decision on the type of document to use. Pendleton (2012) stated both types of documents include a testing requirement to ensure the product achieves the approved KPPs and KSAs. Similarly, Senderowicz and Pfaff (2014) found that testing is also requirement written within every new drug proposal submitted to the FDA for approval. After approving an ACAT III document, the Commander of the CoE

sends the ACAT III document, CPD or CDD, to the ARCIC gatekeeper (see Figure 3) to move the document through the JCIDS process (JCIDS, 2015).

Manual Enclosure E, the ARCIC gatekeeper (see Figure 3), is responsible to move documents through the JCIDS process as well as inform the JCIDS process review board, all military stakeholders such as personnel within CoEs of Armor, Infantry, Artillery, and Signal branches, and the Army General Staff on the forthcoming ACAT III program documents (CJCSI, 2015). The gatekeeper processes all incoming ACAT III documents to ensure the documents are complete prior to starting the deliberate or expedited approval process. Although, the gatekeeper may provide recommended changes to the CoE requirement writer to ensure any variances such as waived areas within the document due to nonapplicability meet the requirements of the Army leadership (JCIDS, 2015).

Manual Enclosures F and G (see Figure 3) shows the start of the deliberate and urgent staffing process for review and validation of an ACAT III document (JCIDS, 2015). The urgent process is an expedited review and validation by Army leadership to obtain a capability without all stakeholder approvals that may mitigate an eminent warfighter loss of life situation (JCIDS, 2015). Accordingly, the deliberate process ensures appropriate rigor and assessment by all of the relevant stakeholders across the DOD associated with the ACAT III program being approved (JCIDS, 2015). Unfortunately, each review step has no specific time line for approval. However, according to the JCIDS manual, the estimated time-line to obtain approval of and ACAT III document through the complete JCIDS approval process is 97 days (JCIDS, 2015).

Therefore, by adding the eight months (240 days) Pendleton suggested it takes to develop an ACAT III document to 97 days to complete the JCIDS approval process, the total JCIDS approval time to develop and approve an ACAT III document using the deliberate planning process is 337 days (Pendleton, 2012; JCIDS, 2015).

Synthesis of the JCIDS Process

The Chairman of the Armed Forces in 2003 approved the JCIDS process, CJCS Manual 3170.01, to address specific acquisitions of interoperability of products across the different military branches of DOD. However, the speed of the acquisition approvals was not a priority. Over the years, the CJCS issued seven revisions of the manual to reflect the changes in the JCIDS process. The current version is CJCS Manual 3170.01I. In view of that, the JCIDS approval process evolved to become the approval process for the defense acquisition system (DAS). The Army senior leadership uses the JCIDS process to approve all Army requests for acquisitions ACAT III, II, and I programs. Using the current process, it currently takes 72 to 90 months to deliver a new capability to the warfighter.

Technology advances every 14-18 months (540 days) (Sullivan, 2015). To ensure the most current ACAT III technological products are in the hands of the warfighter, acquisitions and deliveries of products must match the rate of advancement in technology. Consequently, this is not occurring and the loss of efficiency by the warfighter affects the safety of the United States citizens. The Commander of the Army Capabilities Integrated Center (ARCIC) now has the responsibility to move documents through the JCIDS approval process in the most expeditious manner. As a result, the

current estimated time to generate and approve an ACAT III document is 337 days. Therefore, U.S. Congress approved the FY16 NDAA to mandate the U.S. Secretary of Defense streamline the JCIDS requirement approval process.

Review of Relevant Theories

The purpose of this qualitative descriptive single case study is to explore strategies that senior U.S. Army Commanders might use that may reduce the JCIDS approval time of an ACAT III military need. The four theories chosen to review for possible use in exploration of strategies for senior Army Commanders are total quality management (TQM), business process improvement (BPI), Six Sigma, and theory of constraints (TOC). All of these theories have process improvement as a core application. However, managers address the process problem differently depending on the chosen theory.

Green (2012) suggested that TQM is both a philosophy and a set of activities emphasizing continuous process improvement. As an example, developing a statistical analysis of a process to address its improvement is one activity. Accordingly, by following TQM's statistical philosophy the Army leadership might develop strategies to explore each activity within the JCIDS process. The goal of business process improvement (BPI) is to affect process improvement through streamlining production and operation while maintaining high quality output (Harrington, 1991). Therefore, using BPI's streamlining applications might provide strategies to explore the identification and removal of redundant or unnecessary activities within the JCIDS process.

Hilton and Sohal (2012) explained how the application of Six Sigma emphasizes the reduction of variations through statistical analysis to resolve problems within a process. Additionally, managers using Six Sigma could obtain internal process improvement by systematically identifying, controlling, and eliminating root causes of variations (Harry, 1986). Therefore, a strategy using Six Sigma's applications might provide strategies to explore through statistical variation analysis to standardize the JCIDS process.

The application of TOC is the exploration of a process that may generate faster throughput while decreasing operational inefficiency by addressing constraints of a process (Goldratt & Cox, 1984). Accordingly, a strategy to explore the JCIDS process might include the theory of constraint's application to identify and remove functions and activities that impedes throughput of documents within the JCIDS approval process. Subsequently, senior U.S. Army Commanders might use any of the four applications to explore strategies to reduce the estimated 337 days it takes to generate and approve an ACAT III program document through the JCIDS approval process.

Total Quality Management

Petersen (1999) found that TQM evolved from Shewhart's work at Bell Telephone Laboratories in 1923 and from Shewhart's published statistical charts in 1931. In addition, control of quality is a key business strategy used as a metric for continuous improvement (Shewhart, 1931). Managers of production facilities use Shewhart's control charts to track process parameters by plotting data over time. Shewhart's variable process charts are mean, range, and standard deviation (Shewhart, 1931). Mean equals the sum of

all the responses divided by the number of responses. Thus, managers use the mean chart to plot the average outcome of that process. Range equals the absolute difference between the smallest and largest value. Thus, managers use the range chart to plot the difference between the maximum and minimum outcome of that process. Standard deviation is the square root of the variance. Thus, managers us the standard deviation chart to plot the number of standard deviations plus or minus from the mean based on outcomes of that process (Breyfogle, 2003). Moreover, Breyfogle suggested that these charts aid in the development of strategies to explore process improvements.

Shewhart (1931) established problem of control, nature of control, and definition of control as components to address process improvement. In addition, he defined quality using all aspects of quality control specifications, issues with inspection of incoming materials, inspections of every process, improvement of processes, and operational definitions and problems. Accordingly, Shewhart (1931) stated that the effort of quality control meant addressing every activity and technique that contributed to the success of the organization. Shewhart (1931) postulated on control suggesting that not all systems are alike in their ability to enable managers to predict the future based on the past. Therefore, Shewhart suggested that managers must address long-term solutions as opposed to short-term fixes.

Green (2012) suggested that following Total Quality Management principles are a strategic approach for leading an organization. Therefore, using TQM focuses on the long-term quality for the customer. Furthermore, quality improvement is no longer a slogan but became a survival technique as a competitive weapon for manufacturing

operations such as Ford, General Electric, and Toyota in the twenty-first century (Green, 2012). Green (2012) found that using TQM represented a paradigm shift in focus away from short-term solutions to long-term quality control improvement. However, Green (2012) revealed that following TQM for nonmanufacturing areas had variable degrees of success.

Green (2012) explained that adopting TQM principles requires an organization to change its culture. However, Green suggested that taking advantage of the organization's current culture was also important (see Figure 5). In addition, Green found that leaders placed emphasis on changing the focus to the workers to maintain the quality standards. Consequently, leaders emphasize the satisfaction of internal and external customers where employees are customers throughout the entire process. Furthermore, a successful TQM culture involves effective internal and external customer-supplier process (see Figure 5). Chang and Chen (2014) suggested that leaders focus on customers. Accordingly, Green (2012) reiterated that when leadership embraced the TQM principles, the value of the organization increased.

Shewhart (1931), Green (2012), and Mosadeghrad (2014) contended that the primary mission of leadership of a TQM organization is to meet the need of the customer through quality, commitment, and communication (see Figure 5). Neches and Madni (2012) found that computational technology might enable fast, efficient and inexpensive engineering. In addition, provide rapid development, deployment, and operation of effective systems. Therefore, Green (2012) stated that increasing satisfaction of

customers and other stakeholders through cost reduction, process improvement, and goal development is essential to staying relevant in the twenty-first century.

Total quality management model major features

Figure 5. TQM major features and connectivity. Shows the connection between culture, communication, and commitment as a process to supply the customer. Identifies within TQM three major pillars for success, Teams, Tools, and Systems by J. Oakland, 2014, *Total Quality Management and Operational Excellence: Text with Cases*, p. 22. Copyright 2014 by Routledge. Reprinted with permission.

Figure 5 illustrates the basic TQM attributes and shows the connection between tools, teams, and systems. Green (2012) and Mosadeghrad (2014) explained how total quality management integrates management techniques, existing improvement efforts, and technical tools. They emphasized that the integration of tools and techniques is vital if managers want to use TQM. Furthermore, process maps and statistical tools are two of a wide range of TQM tools. Moreover, visionary leadership and customer-driven excellence are two of the TQM philosophies.

Leaders of an organization are important when implementing the concepts of total quality management (Mosadeghrad, 2014). Green (2012) and Mosadeghrad (2014) found

that without sound leadership, the quality control process not effective is. Therefore, leadership must establish the proper environment and lead by example for a successful implementation of TQM.

Green (2012) and Mosadeghrad (2014) explained that managers must enforce worker empowerment when using TQM. Moreover, Mosadeghrad found that leaders must grasp the TQM concepts and be proactive in the implementation of those TQM concepts. However, Green (2012) suggested that it is essential leadership take care before starting a radical change. In addition, Mosadeghrad (2014) found that the biggest obstacle to successful implementation of TQM is middle management. Therefore, before making any changes, leadership of an organization must understand the gap between what is management's intent and reality of implementation of TQM within the organization.

Green (2012) determined that the environment that surrounds employees has a profound effect on the employee's ability to be effective. However, to create the proper environment requires a change in culture. Moreover, a change of attitudes and working methods are essential to develop the proper environment. Accordingly, Green (2012) warned how difficult it is to change a culture and the importance of maximizing the efforts within the current culture. Furthermore, he stated that not only do the working members need a sound environment, but also the tools of the trade (see Figure 5).

Breyfogle (2003) found that mapping a process is one important tool to improving a process. However, managers can develop process maps differently, but all maps show the responsible party at each step of the process. Breyfogle found that a process flowchart

document can identify opportunities for improvement and key process input variables. Therefore, drawing of a process map is sufficient to identify quality problems.

Deming (1986) introduced statistically grounded approaches to identify defects within a process. Deming (1986) found that without the use of these statistical tools, managers could make incorrect decisions regarding the cause of process problems. Therefore, Deming used statistical process control (SPC) charts to identify causes of process problems.

Deming (1986) expounded on Shewhart's control charts in defining SPC charts. The SPC chart can either track variables or attribute process parameters. Breyfogle stated that the typical control limits of the SPC chart are plus and minus three standard deviations from the mean. Breyfogle (2003) explained how the standard deviation value is a function of the sampling plan used to obtain measurements of the process. However, he emphasized that the process, not the specification, determines the process control limits of the SPC charts.

Breyfogle (2003) found that managers use the application of these SPC charts to determine whether the process is in control, meaning that the output of the process is within acceptable limits expected of the process. Furthermore, military leadership might use SPC charts, as a strategy, to investigate the reduction of time of an ACAT III document through the JCIDS process. Therefore, TQM could be a relevant application for use by senior Army Commanders upon which to base an examination of the JCIDS ACAT III needs approval process. The Army leadership might use statistical analysis as a TQM application for process improvement. However, statistical analysis is associated

with a quantitative study. Therefore, TQM is not appropriate to explore possible strategies within the conceptual framework for this qualitative single case study.

Business Process Improvement (BPI) Extension of TQM

Harrington (1991), founder of business process improvement (BPI),defined the goal of BPI is to affect process improvement through streamlining production and operation, while maintaining high quality output to achieve customer satisfaction. Harrington suggested that leaders might explore process improvement using these four phases of BPI: organizing for improvement, understanding the process, streamlining, and developing measurement and controls. As to streamlining a process, congressional leaders approved The National Defense Authorization Act of FY2016, Section 810, to mandate the Secretary of Defense to streamline the JCIDS requirement approval process (NDAA, 2015).

Mosadeghrad (2014) suggested that the leader of an organization is responsible to construct a strategy and organize the workers to accept the concept of business process improvement. Additionally, the leader should unify the workers to use all of their unique skills and talents in support of organized business process improvements (Mosadeghrad, 2014). By unifying workers, every step of the process might provide high quality output. The use of business process improvement (BPI) is another application that leaders should understand and master in order to move their organizations forward.

Understanding the BPI application requires understanding all the dimensions of the entire business process (Harrington, 1991). Harrington (1991) explained how understanding the entire business process improvement included process definition,

bounding the scope and boundaries, definition of customer expectations and understanding the purpose and expected outcome of the process.

Harrington (2005) defined bounding the scope of the process as the first step to the establishment of parameters of the process to achieve the expected outcome. Consequently, BPI concentrated on customer expectation to the point that the speed of the process and quality of the outcome meets or exceeds the needs of the customer. Harrington explained how managers could excel at customer satisfaction by streamlining all aspects of the organization and optimizing the effectiveness of all the resources.

Harrington (2005) defined streamlining as an attempt to improve efficiency, effectiveness, and adaptability of the business process. Thus, Harrington recommended streamlining through automation, standardization, elimination of bureaucracy, and identification of improvement opportunities. However, streamlining a process might produce improved results but might not achieve customer expectations.

Harrington (2005) stated that measurement and controls is the implementation of a capability to monitor a process for continuous improvement. Harrington emphasized that proper control of a process is important in achieving customer satisfaction. Harrington (2005) stated that customer satisfaction is essential for organizational survival.

After years of working with multiple types of organizations, Harrington (2005) identified five pillars of excellence to address processes within an organization: resource management, knowledge management, change management, project management, and process management. Harrington found the five pillars were not individually new

concepts and to different degrees already being used by managers in different industries. However, by combining and managing the pillars together created a new application for managers to use. Harrington found that managing the five pillars together was the key to managing a successful organization. Consequently, if top management concentrated on one or two of the pillars and not all, that was a formula for a less than optimal outcome.

During an Allied Academies International Conference in 2006, Doss and Kamery (2006) identified concerns of the improvement initiatives applying the business process improvement (BPI) application founded by Harrington. Doss and Kamery revealed that the application of BPI did not address an improvement from a process of maturity and evolution perspective. They suggested that the application of BPI required additional framework to provide a managerial tool for successful evolution of process management within the boundaries of production and operations process improvement initiatives. Doss and Kamery (2006) explained how managers applying BPI relied upon strategic command and control measures when considering customer focus and corporate goals. They did acknowledge the beneficial contributions of BPI as a tool to explore and streamline a process to achieve customer satisfaction.

Harrington (2005) emphasized that in order to survive in a competitive environment, leadership of an organization must excel at customer satisfaction. The BPI and TQM applications are similar in that the primary mission of leadership using either application is to meet the needs of the customer through quality improvement. Therefore, BPI is a relevant application that senior U.S. Army Commanders might use to explore strategies in addressing the JCIDS process to satisfy the need of the warfighter.

Six Sigma

Harry (1986) wrote the first formal description of Six Sigma. Consequently, Harry defined the Six Sigma standard as a product or unit of service containing less than 3.4 nonconformities per million opportunities. Breyfogle (2003) stated that Six Sigma is a term introduced by Motorola leadership to emphasize the improvement of processes to reduce variability. Managers using Six Sigma tools could obtain internal process improvement by systematically identifying, controlling and eliminating root causes of variations in a process (Harry, 1986). Hilton and Sohal (2012) suggested that the application of Six Sigma emphasizes the reduction of variations within a process that will solve business problems across an organization. George (2003) found identifying and resolving variations within a nonmanufacturing process might be more difficult. Noteworthy, the JCIDS process is a nonmanufacturing process (JCIDS, 2015).

George explained that in a manufacturing process, an automated procedure exists to schedule and track the flow of materials. However, in a nonmanufacturing process, no such procedure exists. George encouraged personnel within a nonmanufacturing process, to be creative and proactive in developing methods to track the flow of material as well as understand the fluctuation and estimate expected outcomes. Consequently, the importance of tracking the flow of material is the ability to obtain meaningful data to conduct analysis using statistical tools. Moreover, process cycle time is one of those tools.

Process cycle time is parameter of Six Sigma (Breyfogle, 2003). Breyfogle explained that process cycle time equals the amount of time it takes for a product to go

through the entire process. Consequently, process cycle time consists of comparing real and theoretical throughput cycle times. Breyfogle noted that the difference between theoretical and real throughput cycle times is that real throughput includes waiting time between activities. Moreover, the formula to calculate theoretical process time is real daily operating time divided by number of products required daily. Resolution of differences between real and theoretical throughput cycle times can reduce the real throughput cycle time. Therefore, using process cycle time may be a strategy to explore the JCIDS process. Breyfogle offered possible solutions to reducing real cycle times. In addition, the possible solutions include improved work methods, changing sequence, or empowering middle management personnel to reduce the amount of time of senior leadership involvement.

Pyzdek (2003) found that senior leadership of organizations that follow Six Sigma spent less than 5% of their time addressing problems. Therefore, the leadership of such organizations as General Electric, Johnson & Johnson, and Allied Signal embraced the Six Sigma concept of customer value and efficiency (Pyzdek, 2003). Hilton and Sohal (2012) warned that following Six Sigma does not guarantee success. Pyzdek (2003) found that the leadership of General Electric and Allied Signal missed opportunities for further improvements.

Hilton and Shoal (2012) found that managers used Six Sigma to identify characteristics that were important to the customer along with the process that developed those characteristics. For that reason, managers using Six Sigma to explore a process must develop a plan based on the analysis of the process. Consequently, Hilton and Shoal

found that managers developed a plan based on statistical analysis from sample data of the process. Conversely, that sample data may not be representative of the process. Breyfogle (2003) warned that arbitrary sampling plans might yield erroneous conclusions. As a result, Breyfogle suggested using a standard deviation that quantifies the variability of process times in order to ensure accurate measurements for statistical analysis.

Elnadi and Shehab (2015) revealed that a major step in following the Six Sigma application is identifying when a process is in control or sustainment. A process is in statistical control when unusual outputs of a process do not exist (Breyfogle, 2003). However, when a process is in statistical control that does not guarantee the process is producing desired results. Consequently, the overall output of the process could be in statistical control, but could produce 20% defects. Breyfogle explained that these defects could occur if the process average shifted from the intended target. Moreover, Breyfogle suggested using a capability metric study to assess the process situation.

A capability metric study provides managers the ability to generate a control charting strategy for a process in order to separate special-cause events from normal events within a process (Breyfogle, 2003). In addition, Bondar, Ruppert, and Stjepandic (2014) stated that seamless data communication in all phases of the process is a prerequisite for collaboration success. Accordingly, Breyfogle acknowledged that a manager could establish a control chart strategy to monitor only special-cause events, consequently, generating a chart indicating many special-causes leading to management overreaction to changing a process. Breyfogle emphasized that a capability metric study

within Six Sigma should reflect the differences in variance of outputs from the process, but also the effects of those variants across the organization.

Managers use Six Sigma to address changes in a specific process (Hess & Benjamin, 2015). Yusup, Mahmood, Salleh, and Yusof (2015) found three sustainability performances to measure a process; competency accomplishment, economic achievement, and environmental responsiveness. Yusup et al. (2015) argued that manufacturers used a competency metric in practice to react to the fluctuating needs of all stakeholders. Yusup et al. suggested that managers use economic achievement performance (EAP) process to streamline management of manufacturing operations. In addition, managers use EAP to allocate financial resources toward improving manufacturing operation. Yusup et al. found that managers should avoid adverse effects on the environment to achieve manufacturing sustainability. Consequently, managers must exploit current manufacture models and restructure operations to minimize waste from the operations. Therefore, managers can increase manufacturing productivity as well as sustainment in manufacturing practices using the three sustainability performances.

Pyzdek (2003) provided a five-step approach to process improvement: measure, define, analyze, improve, and control. Additionally, Pyzdek explained that measure is collecting and verifying data on key characteristics. Define is identifying key characteristics important to the customer. Analyze is the ability to convert data into information that provides insight into the process that may provide solutions for improvement. Improve is using those solutions to change the process that maybe

beneficial. Control is determining if the process is performing within acceptable limits. Therefore, managers monitor a process to assure that unexpected changes do not occur.

Hess and Benjamin (2015) found that when managers make changes to a process using Six Sigma, those changes affected the entire organization. Hilton and Shoal (2012) supported Hess and Benjamin's findings by stating that changing a process within an organization might have an effect on the ability to meet the customer's needs across the organization. Similarly, Fuzery, Levin, Chan, and Chan (2013) found that understanding the FDA approval process leads to meeting patient needs. Accordingly, the JCIDS process is one of three major processes interwoven within the DOD acquisition system designed to approve, fund, and acquire a military need for the warfighter.

A strategy to apply the Six Sigma application might explore through statistical variation analysis standardizes each activity within the JCIDS process. Thus, the standardization of each activity could reduce the approval time of an ACAT III program using the JCIDS process. George (2003) found that the nature of nonmanufacturing work might make identifying and resolving variations within a process difficult. Therefore, the difficulty in identifying variants for statistical analysis is a primary reason Six Sigma was not the operative theory for this study.

Theory of Constraints

The TOC is an application for exploration of a process for senior leadership of an organization that may generate faster throughput while decreasing operational inefficiency by addressing constraints of a process (Goldratt & Cox, 1984). Therefore, managers apply the TOC to address the changes of a process as it affects the achievement

of the organizational goal. Accordingly, any changes in the JCIDS process affect the goal of the DOD acquisition system. Managers apply the TOC to address identification of a constraint within a process through a series of questions and answers rather than dictating a solution (Goldratt & Cox, 2014). Therefore, the exploration of a process applying the TOC is a management approach through a sequence of questions and answers.

Naor, Bernardes, and Coman (2013) contended that the application of the TOC is an operations management approach to address constraints within a process to improve throughput. Therefore, Naor et al. (2013) linked the functional Goldratt and Cox (2014) stated parts of the TOC to the theoretical definition and properties of a theory that the application of the TOC could explore management of operations within any organization. Accordingly, senior U.S. Army Commanders might apply the TOC to explore strategies in addressing the JCIDS process.

Dr. Goldratt introduced the TOC in 1984 (Goldratt & Cox, 1984). Dr. Goldratt authored four books addressing the TOC. Each book is a novel that uses fictional, but realistic scenarios that addressed business problems. Each book clarified how managers can apply the TOC to explore strategies to address a business problem. As stated earlier, the purpose of this study is to explore strategies U.S. senior Army Commanders might use to reduce the time of an ACAT III document through the JCIDS approval process. Therefore, applying the TOC might provide senior Army Commanders strategies to address constraints within the JCIDS process to reduce the approval time of an ACAT III program.

Dr. Goldratt authored each book to describe a major concept of the TOC. Additionally, Goldratt and Cox (1984) defined the goal, throughput, and the value of throughput to an organization. Goldratt and Cox (1984) defined throughput as the rate at which a system generates value. They explained how increasing throughput while decreasing inventory and operational expense generates value. Therefore, managers can use critical thinking to confront throughput issues.

Goldratt (1990) expounded on defining the goal and explained how the critical thinking process resolves conflicts. Goldratt added to the definition of the goal the ability to provide satisfaction to the customers and a satisfying work environment for employees. Additionally, Goldratt illustrated how critical thinking can change outcomes relating to cause and effect. Goldratt introduced techniques such as cloud diagramming and reality trees. Cloud diagramming is a graphical means of displaying and solving a perceived conflict. Additionally, a reality tree is a means with which to map future expectations given probable changes based on the reality of actual events. Therefore, managers apply the TOC in exploration of functions throughout the process chain to identify constraints and generate changes. This application aligns well with this study.

The critical chain approach to project management is an improvement methodology (Goldratt & Cox, 2014). Goldratt and Cox (2014) explained how understanding the critical chain of a process might generate throughput efficiency. They defined critical chain as the longest sequence of dependent events in a project. Additionally, a resource constraint is anything that restricts an event from performing at maximum efficiency or limits the ability to improve the system. The critical chain

concept is a method adapted to fit not only machines but also people (Goldratt, 1990). Moreover, linkages between the functions of the chain are as important as the links themselves. However, managers determining what ramifications the other links in the chain may create are an issue. Therefore, management's understanding of the chain is vital to the success of the chain.

Goldratt and Cox (2014) argued that the critical chain involved both cost and throughput performance. Additionally, a manager must compromise on either controlling cost or protection of throughput, since controlling cost is in conflict with protection of throughput. Consequently, managers apply the TOC to identify and explore perceived constraints within a process that may affect a process thus the goal of an organization. Therefore, resolving constraints is one approach to process improvement.

Goldratt and Cox (1984) encouraged managers to take a system-level approach to improvement. Goldratt and Cox emphasized that managers should direct their attention toward improving the system, a system being a series of interdependent process that has value by reducing cost, saving time, or increase quality of the product. Goldratt and Cox (1984) explained that a manager taking a system-level viewpoint keeps looking to make improvements to the entire system or organization. Consequently, improving performance for an entire system is a daunting task. However, Goldratt and Cox (1984) found that key improvement points and constraints exist in all systems or processes.

Goldratt and Cox (2014) argued that one underlining pillar in applying the TOC is when a manager identifies a constraint it is a clear indication that someone made a faulty assumption. Additionally, Goldratt and Cox contended that when managers apply the

TOC to a process, managers should treat that process as if that process was wrong. Consequently, Goldratt and Cox defined a five-step approach to process improvement. The steps are identify, exploit, subordinate, elevate, and repeat.

After developing the goal for the process improvement, identifying the constraint is the first step (Goldratt & Cox, 2014). Goldratt and Cox stated that every process has a least one constraint. Therefore, managers use different approaches to identify a constraint. Two examples of constraint identification are using questions and answers to isolate a constraint or identifying the amount of work in queue in front of a process operation before determining the constraint.

Goldratt and Cox (2014) defined exploiting a constraint as improvement. Therefore, exploiting the process is to achieve its maximum capability without expensive upgrades or changes. Exploiting a constraint as a strategy aligns well with this study. However, management's best assessment is to eliminate the constraint before subordinating to existing processes.

Goldratt and Cox (2014) explained the concept of subordinate, involves the improved exploitation from the previous step. Goldratt and Cox explained that once the exploited process achieves maximum capacity, management makes subordinate processes operate at the same pace of that exploited process, even to the detriment of that subordinate process. This is because the subordinate processes are in front of the exploited process. Consequently, by subordinating the exploited process, throughput and reduce work-in-process inventory will improve.

Managers must elevate the new exploited process if throughput is not satisfactory (Goldratt & Cox, 2014). If managers, after analysis, determined the nonmajor expensive upgrades did not produce the desired results, then management must decide if capital improvement, reorganization, or other major expenditures are necessary to improve the process. Managers should repeat the five-step approach for continuous process improvement.

Goldratt and Cox explained how following the TQM philosophy of continuous improvement through reevaluation is rewarding. They suggested that managers reevaluate the process to search for a new constraint. Therefore, by focusing on identifying and reducing constraints, the TOC methodology produces positive throughput of a process affecting the entire organization.

Goldratt and Cox (2014) admitted that focusing on constraints does not require statistical data analysis. Since, the JCIDS process is a nonmanufacturing process whereby acquiring statistical data might be difficult, management can apply the TOC to identifying any existing constraints within the JCIDS process. The theory of constraints places value on the speed of throughput of a process. Accordingly, speed of an ACAT III document through the JCIDS process is a problem addressed by this study. Goldratt and Cox acknowledged that organizations with hierarchical structure value the application of the TOC. Notably, the Army and DOD are examples of hierarchical organizations. Therefore, the application of the TOC, which emphasizes critical thinking and increased throughput without statistical data analysis, is appropriate for use in this study.

Synthesis of Reviewed Theories

The applications of TQM, BPI, Six Sigma, and the TOC have features in common but also different features. The purpose of all the applications is to improve throughput of a process by eliminating constraints within the process. However, the method of identifying and reducing process constraints are different among these applications.

Management teams that apply TQM, BPI, Sig Sigma, and the TOC to address a process improvement begin with analysis of the current process. The analysis may be in a form of SPC control charts (TQM), streamlining (BPI), statistical variation (Sig Sigma), or constraint identification (TOC). Additionally, the application of the TOC and TQM begin with an organizational goal development. However, the differences between using TQM and the TOC are the affects across the organization.

Adopting TQM principles requires an organization to change its culture. The application of TQM requires management and employee commitment to continuous process improvement (Mosadeghrad, 2014). The TQM principle of continuous process improvement is within other applications such as BPI and sig sigma.

Managers apply the BPI standards to streamline a process. Managers that apply BPI standards initially adopt the TQM concept of continuous improvement (Harrington, 1991). Managers that apply BPI standards use statistical analysis to determine the streamlining effort. Managers in effect use the BPI standards as a bridge between the application of TQM and sig sigma.

Managers that apply the Six Sigma standards to analyze statistically a process follow these five steps: define, measure, analyze, improve, and control (Harrington,

2005). Coincidently, managers that apply the TOC to define constraints within a process use similar steps: identify, exploit, subordinate, elevate, and repeat (Goldratt, 2014). However, the difference between the application of the TOC and Six Sigma is in the need of the Six Sigma application to require statistical analysis to identify and control that process (Harrington, 2005).

How to Decide the Operative Theory

One approach to deciding the operative theory is to develop a comparison of the different theories based on chose of this qualitative methodology for this study. Moreover, this qualitative study is to develop possible strategies for senior Army Commanders not to conduct statistical analysis required by applying TQM, BPI, and Six Sigma standards. Additionally, developing statistical analysis aligns with a quantitative or mixed method methodology (Barnard, 2012). Developing possible strategies applying the TOC standards involves exploring process constraints. Developing strategies through the TOC is appropriate for a qualitative methodology. Therefore, the TOC is most appropriate to be the operative theory for this study.

Theory of Constraints: Operative Theory

The specific problem stated by Sullivan (2015b, February) is that senior U.S. Army Commanders lack strategies they may use that might reduce the JCIDS approval time for an ACAT III military need. Additionally, U.S. military Commanders must increase throughput of program documents through the JCIDS process to reduce the approval time (Sullivan, 2012a December). Zheng, Gao, and Wang (2012) found that components pertinent to the increase in throughput include bottlenecks, volume, and

time. Consequently, reducing the JCIDS approval time would involve addressing all throughput components. Therefore, U.S. Army senior Commanders could address the specific problem by developing strategies using the TOC as a philosophy as well as a way of critically thinking.

Goldratt and Cox (2014) defined a constraint as anything that limits a system from achieving higher performance compared to the organizational goal. Goldratt (1990) suggested addressing constraints by providing possible alternatives that leaders may use in support of the current process. Additionally, the most appropriate use of the TOC is through critical thinking (Goldratt, 1990). Moreover, the view consists of analysis of the evidence using critical thinking to identify the goal and provide knowledge and awareness of constraints. Therefore, senior U.S Army Commanders may use the TOC to explore strategies that may engage constraints in the JCIDS process.

Examples of Relevant Use of the Theory of Constraints: Process Assessment

Theory of Constraints: Throughput Process Assessment

Panizzolo and Garengo (2013) explained the relationship between the theory of constraints (TOC) and the production planning and control system called optimized production technology (OPT). Goldratt developed the OPT proprietary software to identify bottlenecks in a manufacturing process. In addition, the software produced a production schedule that reflected the bottlenecks. Panizzolo and Garengo (2013) suggested that while the two terms, TOC and OPT, are interchangeable in literature, they refer to two different things. Goldratt and Cox (1984) enhanced the OPT to produce a manufacture production schedule that provided managers information to be used to

increase throughput. Consequently, Goldratt and Cox modified the OPT in developing the philosophy of TOC.

Panizzolo and Garengo (2013) found that the TOC capitalizes on improving production planning, throughput, and control system performance. Panizzolo and Garengo revealed that the TOC is a philosophy that underpins the working system and OPT is a software package that produces manufacturing schedules. Panizzolo and Garengo (2013) found that some managers of manufacturing operations compared OPT to the material requirements planning (MRP). Manufacturing managers use the MRP software to acquire information for production control. Panizzolo and Garengo stated that the scheduling procedure under the TOC, characterized as *drum-buffer-rope*, increased throughput more than the scheduling procedure using MRP.

Goldratt (1990) defined the drum-buffer-rope scheduling procedure: the drum is the pace of the process defined by the slowest function within the process. The buffer is the ability to move production within the process to avoid delays in production. The rope provides release of orders and material control movement by communicating between critical points of control to ensure synchronization. In addition, Goldratt (1990) introduced the *drum-buffer-rope* concept as an operations scheduling method addressing inventory control and throughput of any process.

Theory of Constraints: Compatible with the MRP for Process Assessment

Panizzolo and Garengo (2013) wrote an article discussing a custom design air cooling manufacturing plant that produces industrial size air conditioners. Panizzolo and Garengo found that one of the products built within the cooling manufacturing plant was

assembled from 3,000 components or subassemblies stocked in the plant. Moreover, the plant structure was an assembly line with 40 operations. Panizzolo and Garengo found that managers of the design air cooling manufacturing plant modified the production planning and control system to use a combination of applications: TOC and MRP.

Panizzolo and Garengo (2013) found that the plant leadership modified the MRP software to implement a TOC approach to production planning based on the drum-buffer-rope concept. They found that the plant leadership identified a constraint at the freon charging stations. Additionally, they revealed that the plant manager scheduled a two-day buffer at the freon charging operation. Consequently, the plant personnel modified the MRP system to reflect the two-day buffer at the freon operation within the process. Subsequently, Panizzolo and Garengo stated that establishing the two-day buffer mitigated a constraint within the process. Therefore, Panizzolo and Garengo (2013) found that the throughput of products in the air cooling manufacturing plant increased by acknowledging and reducing a constraint based on management's understanding and application of the TOC.

Theory of Constraints: Inventory Process Assessment

Chou, Lu, and Tang (2012) wrote an article about an aircraft manufacturing facility. Chou et al. (2012) explained how a manufactured aircraft consists of specialty parts and materials. Additionally, Chou et al. found that acquiring those specialty parts and materials involved long lead times. Therefore, companies that build aircraft are required to stock numerous parts and materials in a warehouse.

Chou et al. (2012) stated that aircraft manufacturers face intense cost competition. Byrne and Mo (2015) found that when managers estimate the cost of complex engineering systems such as an aircraft the anticipated maintenance of the aircraft is included in the total cost. Accordingly, aircraft manufacturers through a manufacturing process have a need to reduce warehouse inventory to meet customer's demands and minimize cost.

Chou, Lu, and Tang (2012) showed how aircraft manufacture systems that applied the TOC increased performance and reduced costs compared to using MRP or Six Sigma. Chou et al. (2012) maintained that managers of the aircraft manufacture facility used the TOC to view the company as a system, as well as a chain of interrelated processes. Accordingly, each company must have an organizational goal of throughput capability along with a set of conditions to meet that goal (Goldratt & Cox, 2014). Goldratt and Cox found that the facility managers could apply the TOC standards to achieve the goal. Therefore, managers used the TOC standards to explore constraints of all the processes throughout the organization.

Chou et al. (2012) argued that managers could improve overall company performance by focusing time and energy on identifying and managing process constraints. Additionally, Chou et al. stated that managers could use the TOC to explore the issue of increased inventory by understanding the problems of high inventory cost. Therefore, Chou et al. contended managers that use the TOC improved work-in-process inventory, throughput lead-time, on-time delivery, inventory turnover, and profitability.

Chou et al. (2012) found, executives at Procter and Gamble and Ford Motor Company reduced inventory by $600 million and $100 million respectively. Additionally, Chou et al. discovered that three-quarters of organizations that use the TOC experienced reduced inventory of over 40%. Hence, Chou et al. argued that managers using the TOC learned to identify what to change, what to change to, and how to cause a change to improve any process.

The Theory of Constraint: Supply Chain, Bullwhip Effect, and Cause-Effect-Cause

Costas, Ponte, Fuente, Pino, and Puche (2014) found, that complexity characterizes the environment in which companies operate. Cannon, Cannon, and Low (2013) found that senior managers recognize supply chain management as strategically important. Costas et al. (2014) argued a phenomenon called the bullwhip effect. The *bullwhip effect* occurs due to changes in the supply chain based on orders not directly associated with a client. Costas et al. suggested that the bullwhip effect is a major cause of inefficiencies in a supply chain due to increased storage, labor, inventory and throughput costs. Therefore, managers could apply the TOC to explore the bullwhip effect (see Figure 6).

The theory of constraints systemic approach

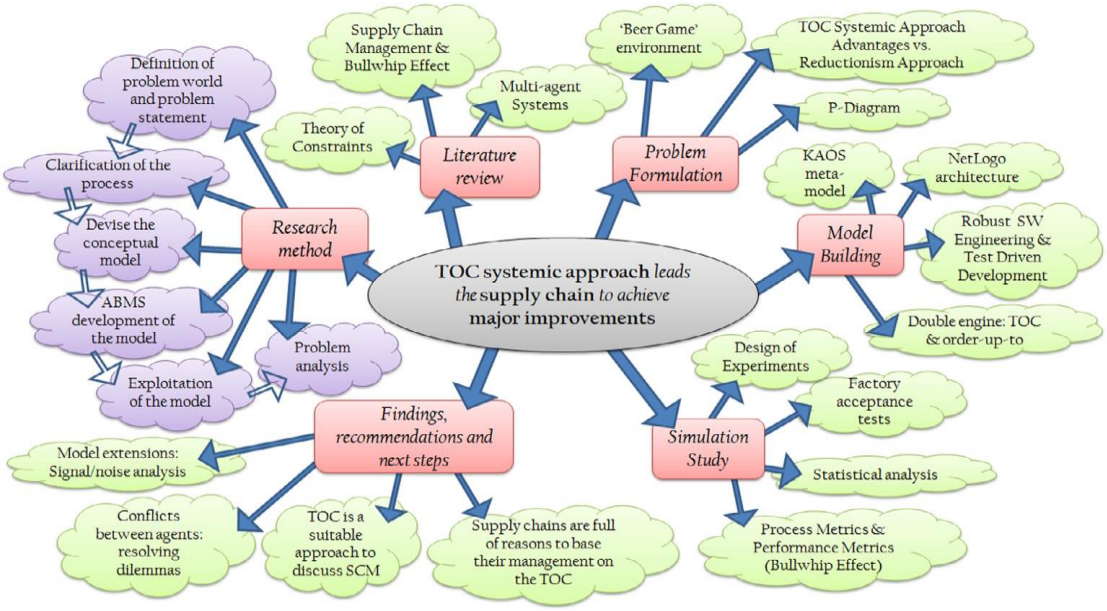

Figure 6. Supply chains have reasons to operate according to the theory of constraints' systemic approach. Research method, Literature review, Problem Formulation, Model Building, Simulation Study, and Findings, and recommendations work together to apply Goldratt's theory of constraints to reduce the bullwhip effect through agent-based modeling by J. Costas, B. Ponte, D. Fuente, R. Pino, & J. Puche, 2014. *Expert Systems with Applications, 4, p.* 2050. Copyright 2014 by Elsevier. Reprinted with permission.

Managers using critical thinking can apply the TOC standards for organizational process evaluations using six organizational measures; throughput, inventory, operating expense, net profit, return on investment and cash flow (Goldratt & Cox, 1984). Managers use the TOC to identify constraints. Hence, Costas, et al. (2014) found that managers who used the TOC reduced the bullwhip effect (see Figure 6).

Costas et al. (2014) concluded that customer satisfaction is a contributor to throughput, increased efficiency, and improving capacity. They found that some managers used the TOC to explore customer influences on the supply chain. Similarly, Goldratt and Cox (2014) stated that understanding customer demands is important in

identifying bottlenecks in a manufacturing process. However, Costas, Ponte, Fuente, Pino, and Puche (2014) found that customers who directly affected the efficiency of the supply chain became the bottleneck by generating the cause-effect-cause relationship.

Changes in customer demands generate a cause-effect-cause relationship within the supply chain (Goldratt, 1990). Goldratt and Cox (1984) and Costas, Ponte, Fuente Pino, and Puche (2014) stated that managers who made adjustments in the supply chain based on a current customer demand could affect throughput and lead times of final delivery. Costas et al. (2014) stated that the possible effect in lead-time causes the customer to change demands. Therefore, managers could apply the TOC standards to address the cause-effect-cause phenomena from an organizational and process level.

Costas, Ponte, Fuente, Pino, and Puche (2014) talked with managers that applied the TOC standards to demonstrate, from an organizational level, how to treat the customer as a bottleneck. Accordingly, they found that managers followed the TOC standards and instituted buffers within the supply chain to handle the day-to-day changes in customer demands. Therefore, Costas et al. (2014) concluded that applying the TOC standards by using buffers generated a dramatic improvement in throughput within the supply chain.

Synthesis of Examples: Theory of Constraints on Similar Process Concerns

The application of the TOC involves critical thinking as well as executable standards that contain six organizational measures; throughput, inventory, operating expense, net profit, returns on investment, and cash flow (Goldratt, 1990). Additionally, the application of the TOC is to improve the overall organization by concentrating on

improving bottlenecks within the organization (Goldratt, 2014). Therefore, defining the goal of an organization is critical to the successful revision of a process.

Managers that apply the TOC learn to identify what to change, what to change to, and how to cause the change for any process (Goldratt, 2014). Accordingly, managers can use the *drum-buffer-rope* concept as an operations scheduling method of addressing inventory control and throughput of any process. Managers that apply the TOC achieved increased throughput of products. Therefore, a manager could apply the TOC as a way of critically thinking to assess all processes within an organization based on the goal of the organization.

Synthesis of the Literature Review

With the current state of world uncertainty, the ability of our military to protect the citizens of the United States is never more important. The warfighter's ability to perform is directly associated with the capability of the equipment they use. For years, reports written by different individuals within the Government Accountability Office (GAO) stated the many issues affecting the ability of government personnel within the Defense Acquisition System (DAS) to acquire and deliver current technology and equipment to the warfighter. Accordingly, one of the issues is the estimated 337 days it currently takes to approve a need using the JCIDS process.

With current technology evolving approximately every 14 to 18 months (540 days), using 60% of that time to approve a need using the JCIDS process is an issue (Sullivan, 2016). The current time to develop and approve a need through the JCIDS process is 337 days (Pendleton, 2012; JCIDS, 2015). Thus, the United States Congress

approved the National Defense Authorization Act (NDAA) FY16 to mandate the Secretary of Defense to streamline the JCIDS process.

Several applications such as TQM, BPI, Six Sigma, and TOC might support the development of strategies for senior Army Commanders. All of the applications have as a core standard the ability to identify and possibly improve throughput of a process. However, only one application, TOC, has the ability to improve a process without the use of statistical analysis (Goldratt, 2014). The JCIDS is not a manufacturing process so accumulating statistical data for analysis is difficult. Therefore, applying the TOC to generate possible strategies for senior Army Commanders to address the JCIDS process is the operative approach.

Transition

Section 1 began with the foundation and background of the problem. The purpose statement included the scope and direction of this study. The nature of the study included the reasoning for selecting a qualitative methodology and descriptive design. The research question and conceptual framework identified the central question as well as explained the theoretical lens. Section 1 concluded with the review of professional and academic literature establishing a baseline of the JCIDS process and examples of relevant theories leading to the theory of constraints being the operative theory.

In Section 2, I outlined a systematic process for data collection and data analysis. I explained my role as the researcher and how the Interview Protocol Guide (see Appendix B) and Informed Consent document may enhance data reliability, dependability, as well as provide the participant an understanding of their rights. I

identified the participant population within three organizations. I addressed the use of the typical case purposive sampling to select qualified interview participants. I addressed the research method and design by conducting a qualitative research and a single case study design. I explained how I conducted an ethical research as well as the use of data collection instruments. I explained the different types of data collection techniques to include the organization and storage of the data collected. I explained the plan for data analysis as well as the chain of the data. I addressed the collection of valid, reliable, transferable, and dependable data suggested by Fink (2014), Sikahala (2014), and Yin (2014) as important for a case study.

In Section 3, I displayed the findings, analysis, conclusions, and implications for professional use. I developed themes tied to the conceptual framework and literature review. My exploration of concerning strategies is for senior U.S. Army Commanders use that may reduce the JCIDS approval time of an ACAT III military need. I closed with further research recommendations, reflections, and a clear message of the study.

Section 2: The Project

Purpose Statement

The purpose of this qualitative descriptive single case study was to explore strategies that senior U.S. Army Commanders might use to reduce the JCIDS approval time for ACAT III military needs. I collected data by conducting interviews and analyzing current and historical ACAT III documents, which I obtained from requirement writers and senior U.S. Army Commanders located at Fort Benning, Georgia; Fort Eustis, Virginia; and MacDill AFB, Florida. This research may affect social change by enhancing the safety of U.S. citizens through increased DOD warfighting efficiency as well as possibly reducing the burden on taxpayers through reduction of administrative costs.

Role of the Researcher

My responsibility as the researcher was to collect unbiased data through semistructured interviews and reviews of current and historic ACAT III program documents while protecting the confidentiality and rights of the participants. Each participant received an informed consent document to sign that listed the participant's rights. I reviewed this document with participants to enhance their understanding of their rights. In the document, I apprised participants that collected data would be stored in a secure location and destroyed after 5 years.

My conduct of this qualitative single case study followed Yin's (2014) design for developing a case study. The semistructured interviews were with senior U.S. Army commanders and requirement writers at Fort Benning, Georgia, MacDill AFB, Florida,

and Fort Eustis, Virginia as suggested by Fink (2014). I stored my field notes in labeled binders identified by document name. I believe that following Yin's (2014) and Fink's (2014) guidelines for data source triangulation enhanced the validity of data that I collected. Therefore, my data source triangulation included three sources of research, semistructured interviews, review of current ACAT III program documents, and review of historical ACAT III program documents. I followed Fink's and Yin's guidelines on how to enhance data reliability by conducting transcript reviews with participants after interviews as well as follow-up member checking to enhance data reliability and creditability.

My experience includes over 13 years of direct knowledge of the JCIDS and DOD acquisition system, instructor of the JCIDS process at the U.S. Army Command and General Staff College, and 30 years of experience within DOD as an Army officer and acquisition specialist. Currently I work within United States Special Operations Command (USSOCOM). Previously, I worked in the MCoE. Because of my experience using and teaching the JCIDS process, I had to address my preconceived notions in the collection of data and exploration of the JCIDS process to minimize bias.

I followed the Interview Protocol Guide (see Appendix B) for every interview. It consisted of protocol rules identified in the Belmont Report (Commission, 1979). Following an interview protocol guide provides consistency in conducting interviews through reduction of interviewer bias (Yin, 2014, p. 71). Asking questions listed in the interview protocol guide mitigated interviewer bias by addressing the primary research question and not personal tangents. The interview protocol guide includes Yin's (2014)

five skills for evidence gathering: ask good questions, be a good listener, stay adaptive, have a good understanding of the issues, and avoid biases.

Participants

The participants in this study were requirement writers and senior U.S. Army commanders who use the JCIDS process. The participants are located at the Maneuver Center of Excellence (MCoE) Fort Benning, Georgia, U.S. Special Operations Command (USSOCOM) MacDill AFB, Florida, and the Army Capabilities Integrated Center (ARCIC) Fort Eustis, Virginia. The MCoE Commander is responsible for developing ACAT III requirements for the Army (JCIDS, 2015). The USSOCOM commander is responsible for developing ACAT III requirements for the Special Operations Force (SOF). The ARCIC commander is responsible for the document flow through the JCIDS process. I used a qualitative single case study design to explore personal knowledge of senior U.S Army commanders and requirement writers. The interview participants had a DAWIA level II or higher certification in program management. A person earns a Level II certification by validating his or her knowledge of the JCIDS process through DAU classes.

I received Institutional Review Board (IRB) approval from Walden University, and concurrence from the Army Human Research Protection Office (AHRPO), M. Alvarado, for approval to interview participants at the different military installations. I have a current working relationship with MCoE, ARCIC, and USSOCOM leadership. Miles, Huberman, and Saldana (2014), Fink (2014), and Yin (2014) maintained that having a working relationship and understanding of the subject matter will allow a

researcher to develop rapport with participants, which should enhance their comfort level during interviews. My interview participants are familiar with the current JCIDS ACAT III need generation process, which is fundamental to addressing my primary research question.

Research Method

My qualitative single case study focused on three components of the ACAT III JCIDS approval process: MCoE personnel as document writers, USSOCOM personnel as document writers, and ARCIC personnel as the JCIDS gatekeepers. I used the theory of constraints (Goldratt & Cox, 2014) as a conceptual framework for exploration of strategies that senior U.S. Army Commanders might use that may reduce the JCIDS approval time of an ACAT III military need. Miles, Huberman, and Saldana (2014); Fink (2014); and Yin (2014) suggested qualitative research provides a method to understand a phenomenon through exploration and analysis of multiple sources of data.

Sikahala (2014) stated that the qualitative method is most appropriate for the exploration of strategies to address concerns of an existing process. In contrast to the qualitative method, Bernard (2012) maintained that the quantitative method provides the researcher an ability to examine the relationships between variables and displays that relationship by using concise and objective measurement. McNabb (2015) stated quantitative research is a method to test hypotheses of existing relationships. For this study, the quantitative method was not appropriate because I did not measure anything. Instead, I explored strategies for senior U.S Army Commanders. Bernard (2012) suggested mixed method research combines quantitative and qualitative methods to

determine insights that each method is unable to by itself. For this study, using a quantitative method was not appropriate so using the mixed method was not appropriate. Fink (2014); Sikahala (2014); and Yin (2014) maintained that conducting a qualitative research is most appropriate for exploration of strategies that address concerns of an existing process.

Research Design

I considered four qualitative research designs: ethnography, narrative, phenomenological, and case study. Brown (2014) explained that the ethnographic research design immersed the researcher in a social situation. The researcher is immersed for a specified length of time to probe the societal movements. Marshall and Rossman (2016) suggested that the use of an ethnographic design is to explore the culture within an organization. This study was about exploration of strategies for senior U.S. Army Commanders. Therefore, the use of an ethnography design was not appropriate.

I reviewed and then dismissed using the narrative design. Lewis (2015) stated using a narrative design is a tactic for describing an individual's life story. Lewis explained that a narrative inquiry is an effort to understand and explore lived experiences through conversations with a participant. This study was about exploration of strategies concerning the JCIDS process and not lived experiences of the participants. Therefore, a narrative design was not appropriate.

Englander (2012) stated that the phenomenological design is appropriate for capturing an individual's data based on their life experiences concerning a phenomenon. However, for this study I explored strategies for senior U.S. Army Commanders.

Englander (2012), Marshall and Rossman (2016), and Yin (2014) agreed that the phenomenological design allows for the collection of data from interviews but does not allow for data source triangulation. Therefore, the use of the phenomenological design was not appropriate because developing data source triangulation is important to understand the strategies in use.

I followed Yin's (2014) descriptive single case study design. This study involved exploring strategies through descriptive viewpoints relative to new perspectives of the JCIDS process in a real-world context. Therefore, the descriptive research design emerged as the most appropriate to explore the specific problem phenomena.

The case study design is most suitable for exploring a process because the design allows for data collection from multiple sources and perspectives (Yin, 2014). A case study is a common research methodology used to study organizational issues (Yin, 2014). I followed Yin's (2014) guidance for a case study design by developing research questions and descriptive codes for data analysis.

Yin (2014) stated that data saturation is subjective in a qualitative study. Within a case study design, O'Reilly and Parker (2012) suggested data saturation is realized when enough data are obtained to replicate the study. Yin (2014) stated that the amount of data do not provide data saturation. Instead, data saturation is the richness and completeness of the data. Bernard (2012) stated interviews are one way to obtain data saturation. In addition, developing data source triangulation enhances the attainment of data saturation (O'Reilly & Parker, 2012). I developed data source triangulation using data from

semistructured interviews, current ACAT III program documents, and historical ACAT III records.

Population and Sampling

The entire target population consists of over 1,000 requirement writers and senior U.S. Army Commanders of which I interviewed at least 30. Fink, (2014), Yin (2014), and Albuquerque, Cruz da Cunha, Lucena, and Alves (2014) suggested that the use of a typical case purposive sampling method is to ensure the qualifications of participants. Therefore, I used the typical case purposive sampling to ensure the participants had a DAWIA level II certificate in program management as well as knowledge of the JCIDS process. Ninety-eight percent of the requirement writers and senior U.S. Army Commanders have DAWIA level II certification and knowledge of the JCIDS process (DAWIA, 2015).

I provided the typical case purposive criteria to the leadership at MCoE, ARCIC, and USSOCOM prior to my arrival. I discussed the typical case purposive criteria of the participants with the leadership of MCoE, ARCIC, and USSOCOM to ensure I selected qualified personnel to interview. I focused on five current ACAT III programs and five historical ACAT III programs to review. Yin (2014) stated that interviews might be the main source of data but developing data source triangulation contributes to data validity, reliability, credibility, and saturation.

O'Reilly and Parker (2012) suggested data saturation is realized when no new information is obtained and the study can be replicated. Bernard (2012) stated that the number of interviews needed for a qualitative study to obtain data saturation was

undeterminable. I conducted 30 semistructured interviews of the target population that are requirement writers and senior U.S. Army Commanders working at MCoE Fort Benning, Georgia, USSOCOM MacDill AFB, Florida, or ARCIC Fort Eustis, Virginia. The 30 interviews included participants from each of the three component locations. The participants at each location included requirement writers and senior U.S. Army Commanders. Miles, Huberman, and Saldana (2014) stated that the sample size of a qualitative case study depends on the quality of the interviews. Following O'Reilly and Parker's (2012) definition of data saturation, conducting interviews and collecting data from ACAT III program documents continued until I observed no new coding, no new information, and the ability to replicate the results.

Ethical Research

Prior to collecting interview data, I received approval from the Walden University Institutional Review Board (10-21-16-0488288) regarding collection of data through semistructured interviews while protecting the privacy and rights of all participants in this study. Additionally, I earned a certificate of completion from the National Institute of Health's (NIH) Office of Extramural Research on protecting the rights of research participants. Miles, Huberman, and Saldana (2014) and Yin (2014) suggested that following an interview protocol guide is important to reduce interviewer bias. Therefore, I followed my interview protocol guide (see Appendix B) for every interview. In addition, a discussion with the participants using the Informed Consent document ensured that all participants understood my process to protect each participant's confidentiality. I designed an Informed Consent document using principles outlined in the Belmont Report

(Commission, 1979) to explain to the participants their privacy rights as well as the storage and destruction of the interview data.

The process of informing the participants using the Informed Consent document began by greeting the participant. I used the Informed Consent document and explained to the participant the purpose of the study, why I selected the participant, and the estimated time involved. In addition, we discussed that because the participant is a volunteer there was no obligation or compensation, the process for the participant to withdraw from the study, and the potential value of the study to the warfighter. During the discussion, the participant understood that he or she could stop participating in the interview at any time and received an assigned number for confidentiality. After the interview, if the participant decided not to participate, the Informed Consent document has directions the participant could follow to remove himself or herself as a participant. I explained to the participant that all data collected would be stored for five years in a secure file cabinet in my house and destroyed after five years. The Informed Consent document included the Walden University approval number (10-21-16-0488288) and Walden University contact information should the participant want to ask about the status of the study. To ensure participants' identities remain confidential, I used an assigned number for the participant and no individual or organizational names were used in the study. I was the only person that had access to the Informed Consent document signed by the participant. Dr. Thompson, Director of the Army Research Institute (ARI), confirmed the research question did not address a restricted class within the Army. Therefore, the interview questions as well as the associated interview data was not subject to restriction.

Moreover, M. Alvarado, AHRPO, agreed that the Informed Consent document was appropriate for use with Army personnel.

Data Collection Instruments

I am the only individual who collected and analyzed the data from semistructured interviews and reviews of current as well as historical ACAT III program documents. Miles, Huberman, and Saldana (2014), Fink (2014), and Yin (2014) suggested following an interview guide when conducting interviews is important to reduce interviewer bias. I followed my Interview Protocol Guide (see Appendix B) when conducting the semistructured interviews. The Interview Protocol Guide (see Appendix B) contains the interview questions. After the interview, I conducted transcript reviews by reviewing the recorded interview from the voice recorder with the participants. After analysis of the recorded interview, I followed-up with the participants and validated the analysis through member checking to enhance data accuracy and data reliability. Yin (2014), Marshall and Rossman (2016), and Fink (2014) stated that interviews might be the main source of data but developing data source triangulation contributes to data validity, reliability, and credibility. I conducted data source triangulation using data from the semistructured interviews, reviews of the five current ACAT III program documents, and reviews of the five historical ACAT III program documents.

Data Collection Technique

Yin (2014) stated that conducting interviews is an important source of case study data. I followed my Interview Protocol Guide (see Appendix B) to conduct and record in-person semistructured interviews, generated field notes from reviews of current ACAT III

program documents, and generated field notes from reviews of ACAT III historical program documents located at MCoE Fort Benning, Georgia, ARCIC Fort Eustis, Virginia, and USSOCOM MacDill AFB, Florida. Yin (2014) maintained that developing field notes based on data from collection documents and historical records provides for valid data. My Interview Protocol Guide (see Appendix B) outlines how I conducted an interview as well as provides a reminder to inform the participant of their rights using my Informed Consent document.

Fink (2014), Miles, Huberman, and Saldana (2014), and Yin (2014) maintained that following an interview protocol guide will reduce interviewer bias and promote data reliability. I followed my Interview Protocol Guide (see Appendix B) by conducting semistructured interviews. I greeted the participant, made them feel comfortable, and confirmed their qualifications. I walked the participant through the Informed Consent document discussing with them the interview recording procedure, purpose of the interview, their rights and confidentiality, handling, storage, and eventual destruction of the interview data as well as the purpose of the study. The participant signed the form; I made a copy of the form, and gave the copy to the participant. I am the only person that has access to the original signed Informed Consent document.

I conducted the recorded semistructured interview with the participant using a voice recorder leading with the open-ended questions listed in the Interview Protocol Guide (see Appendix B). After the interview, I conducted a transcript review by replaying and discussing the recorded data with the participant to enhance data accuracy. After analysis of the recorded data, I conducted follow-up member checking with the

participant to discuss the analyzed data to attain data accuracy and reliability. Using the three sources of data, interviews, reviews of current and historical ACAT III program documents, I developed data source triangulation to enhance data validity.

An advantage in conducting recorded in-person interviews was the ability to capture valid data. Doody and Noonan (2013) suggested conducting in-person semistructured interviews would allow the researcher the opportunity to ask additional exploratory questions as the interview flow warrants. However, a disadvantage of conducting recorded interviews is that participants might not be comfortable participating in a voice-recorded interview (Doody& Noonan, 2013). Miles, Huberman, and Saldana (2014) warned that an inexperienced researcher might be misled or overwhelmed and collect too much or irrelevant data. An advantage of developing data source triangulation provides data validity and a way to achieve data saturation as suggested by Marshall and Rossman (2016), Fink (2014), and Yin (2014). Miles, Huberman, and Saldana (2014) stated that developing data source triangulation takes more time, energy, structure, and discipline than collecting a single source of data.

Data Organization Techniques

Daly and Kille (2014) contended that the primary goal of organizing data is to maintain data integrity and security. I collected data from recorded semistructured interviews as well as reviewed and collected data from current and historical ACAT III programs. I followed Yin's (2014) technique on collecting data from documents. I also generated written field notes using binders with typed labels identifying the ACAT III

program. After completing my review of the ACAT III program document, I scanned the field notes onto my personal computer for filing and tagging.

Miles, Huberman, and Saldana (2014), Sikahala (2014), and Yin (2014) suggested using computer software in a qualitative study for ease of recording and storing data. I used Dragon® and Zotero® software to transcribe, store, and organize the data. During the interviews, I used an Olympus voice recorder that recorded and stored the interview. After each interview, I reminded the participant that recorded data would be stored in a secure location and destroyed after five years. I used the Dragon® software to transcribe the recorded interviews into text onto my personal computer. My computer is password protected and I am the only one that has the password. I have intrusion software on my computer to guard against unauthorized entry. The software notifies me of any unauthorized access.

I used the Zotero® software to tag, organize, and store the collected data loaded on my personal computer from transcribed interviews as well as scanned field notes. The Zotero® tags used the defined descriptive codes (see Appendix C) to identify themes. I developed the list of descriptive codes based on concepts explained in the conceptual framework and literature review. I secured all transcribed data, scanned data, research binders, recorded interviews, data disks, and personal notes in a locked file cabinet. After five years, I will destroy all collected data.

Data Analysis

Miles, Huberman, and Saldana (2014) contended qualitative researchers devise creative ways to present data and conduct analysis. Miles et al. (2014), Fink (2014), and

Yin (2014) suggested developing data source triangulation to promote data validity. I developed data source triangulation using data from recorded semistructured interviews, field notes of current ACAT III program documents, and field notes of historical ACAT III program documents.

The sequential process for data analysis begins with the collection of data. I collected data from recorded semistructured interviews, reviews of current ACAT III program documents, as well as historical ACAT III documents. I used the Dragon® software to transcribe the recorded interviews into text onto my personal computer. I scanned the field notes onto my personal computer. I used Miles, Huberman, and Saldana's (2014, p. 46) method of data analysis using computer software. Accordingly, the method includes writing field notes, coding with key words, linking relevant data to form themes, counting frequencies of words, and displaying data in an organized manner. I used descriptive codes identified within the research data or codes I developed (see Appendix C) based on the concepts of the theory of constraints found in the conceptual framework and literature review. I followed Yin (2014), Sikahala (2014), and Miles, Huberman, and Saldana (2014) suggestions by listing all relevant data, eliminating any information that did not meet the objective, and created a composite of the description to synthesize the data. Following the Miles et al. (2014) method of data analysis using computer software in a qualitative study, I used the Zotero® software with my defined codes (see Appendix C) to identify key themes.

I correlated the key themes with information found in the literature review and in the conceptual framework. The correlation included the key themes and information of

the JCIDS process viewed through the lens of the theory of constraints. I continued to search for any articles written by anyone relating to the DOD requirement approval or acquisition process.

Data Reliability and Validity

Fink (2014), Miles, Huberman, and Saldana (2014), and Yin (2014) maintained that following an interview protocol guide will reduce interviewer bias and promote data reliability. I followed my Interview Protocol Guide (see Appendix B) to conduct and record in-person semistructured interviews, generated field notes from reviews of current ACAT III program documents, and generated field notes from reviews of ACAT III historical program documents. Marshall and Rossman (2016) suggested conducting member checking as a follow-up to the interview to enhance data accuracy and reliability. I followed Marshall and Rossman's suggestion and conducted follow-up member checking with the participants of the recorded interviews. Miles et al. (2014), Fink (2014), and Yin (2014) suggested developing data source triangulation to enhance data validity. Therefore, I developed data source triangulation using semistructured interviews, reviews of current ACAT III program documents, and reviews of historical ACAT III program documents.

Yin (2014) contended maintaining a chain of data will increase data reliability in a qualitative case study. I followed Yin's (2014) chain of data procedure (see Figure 7). Yin (2014) suggested the researcher provide the reader the ability to follow the data trail from initial search to conclusion. Therefore, I provided the reader the opportunity to trace the data regardless the direction.

Maintaining chain of data

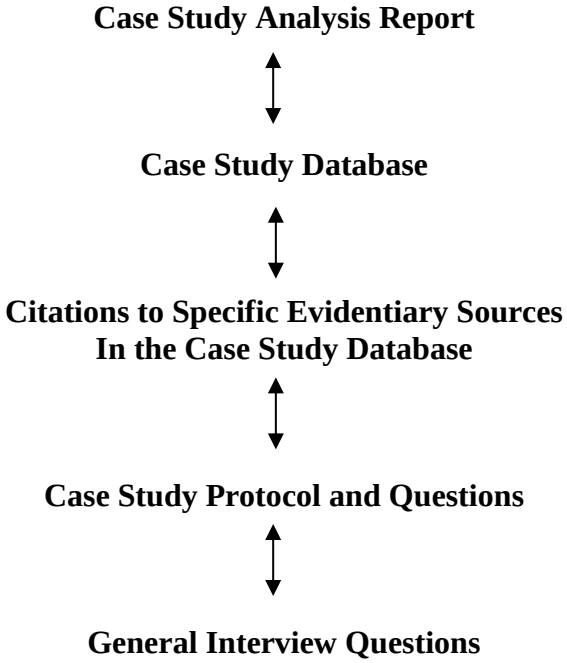

Figure 7. Flow of data between study questions and case study report that includes questions, protocol, and databases. Ability to trace data between initial answer of questions and final analysis by R. K. Yin, 2014, *Case study research: design and methods,* p. 128. Copyright 2014 by Sage. Reprinted with permission.

Fink (2014) maintained that data dependability is associated with the consistency of findings. Marshall and Rossman (2016), Miles, Huberman, and Saldana (2014), along with Yin (2014) suggested that conducting continuous reviews of the data may enhance data accuracy and dependability. I constantly reviewed the ACAT III program document binders and the transcribed interview records to enhance data dependability.

Lincoln and Guba (1985) contended data credibility is the confidence in the accuracy of the data. Miles, Huberman, and Saldana (2014) suggested member checking and data source triangulation enhances data validation and creditability. After an interview, I conducted transcript reviews and member checking with the participants to

enhance data credibility. I scanned field notes, current and historically ACAT III documents for authenticity, and conducted data source triangulation to increase the credibility of the data.

Eriksson and Kovalainen (2008) suggested data transferability is demonstrating the data have applicability in other contexts. Yin (2014), Marshall and Rossman (2016), and Sikahala (2014) maintained that data transferability enhance external validity. I followed the suggestions of Yin (2014) and provided sufficient detail to the reader within the scope of this case study that little relevant data remains untouched. I created research binders with field notes and interpretative data of current and historical ACAT III documents as well as data disks with recorded interviews and analyzed data available for future researchers to use. However, I will destroy all collected data after five years.

Sikahala (2014), Miles, Huberman, and Saldana (2014), and Yin (2014) contended data confirmation is the ability of the researcher not to subject the data to bias or personal interest. Fink (2014), Miles, Huberman, and Saldana (2014), and Yin (2014) maintained that following an interview protocol guide will reduce interviewer bias and promote data confirmation and reliability. I followed my Interview Protocol Guide (see Appendix B) for every interview to reduce interviewer bias and enhance data confirmation. I followed Yin's (2014) suggestion and conducted member checking of the analyzed interviews to enhance data confirmation and accuracy. Moreover, I developed an audit trail linking the raw data to field notes to data analysis that enhanced data confirmation.

Within a case study design, O'Reilly and Parker (2012) suggested data saturation is realized when enough information is obtained to replicate the study. Miles, Huberman, and Saldana (2014) and Fink (2014) defined data saturation as the amount of data sufficient to provide solid evidence of the findings. Yin (2014) contended data saturation in a qualitative study is subjective. My 30 semistructured interviews with requirement writers and senior Army Commanders located at three JCIDS component organizations along with reviews of five current and 10 historical ACAT III program documents provided the appropriate amount of evidence to achieve data saturation. Following O'Reilly and Parker's suggestion on data saturation, I continued to generate data until the collected data allowed future researchers to replicate this study.

Transition and Summary

In Section 2, I outlined a systemic process for research collection and data analysis. The Interview Protocol Guide and Informed Consent document may enhance data reliability, dependability, as well as provide the participant an understanding of their rights. I followed Yin's (2014) suggestion on using purposive sampling to select qualified interview participants. I developed data source triangulation (Yin, 2014) using data from semistructured interviews, current ACAT III program documents, and historical ACAT III program documents to enhance data validity and a way to achieve data saturation. Data saturation occurs when new research fails to generate any new information or when any researcher can use the accumulated data and replicate the same results. Conducting 30 interviews with requirement writers and senior U.S. Army Commanders at three component organizations as well as reviews of current and historical ACAT III program

documents attained data saturation based on O'Reilly and Parker's (2014) definition. I collected ethical, reliable, transferable, and dependable data suggested by Fink (2014), Sikahala (2014), and Yin (2014) as important for a case study.

In Section 3, I displayed the findings, analysis, conclusions, and implications for professional use. I developed themes tied to the conceptual framework and literature review. My exploration of concerning strategies was for senior U.S. Army Commanders to explore what might reduce the JCIDS approval time of an ACAT III military need. I closed Section 3 with further research recommendations, reflections, and a clear message of the study.

Section 3: Application to Professional Practice and Implications for Change

Section 3 contains the following subsections: (a) introduction, (b) presentation of the findings, (c) application to professional practice, (d) implication for social change, (e) recommendations for actions, and (f) recommendations for further study. Additionally, this section contains a discussion of the themes found during the study. I conclude Section 3 with my reflections, a summary, and a discussion of my conclusions related to the study and study process.

Introduction

The purpose of this proposed qualitative descriptive single case study was to explore strategies that senior U.S. Army Commanders may use that might reduce the JCIDS approval time of an ACAT III military need. I used TOC as my conceptual framework through which I developed research questions. The primary research question was, what are strategies that senior U.S. Army Commanders might use to reduce the JCIDS approval time for an ACAT III military need? Data were collected at three DOD organizations.

The themes that emerged from data analysis provide insight into important factors that U.S. Army Commanders should consider when formulating a comprehensive strategy to reduce the JCIDS approval time of an ACAT III military need. Six themes emerged from the data analysis that may be used to explore possible strategies: (a) levels of approval, (b) number of reviews, (c) should the Chief of Staff of the Army approve an ACAT III need, (d) the value of worldwide staffing, (e) education and experience of

JCIDS personnel, and (f) absence of an objective goal to reduce the time of the JCIDS process.

Presentation of the Findings

This section contains a discussion of the six themes that emerged from the analysis. During the study, I conducted 30 semistructured interviews to obtain data related to exploration of strategies senior U.S. Army Commanders might use to reduce the JCIDS approval time for an ACAT III military need. Additionally, I reviewed five current and 10 historical ACAT III documents at two DOD organizations to establish an understanding of how document writers develop an ACAT III need document and to improve my understanding of the ACAT III need approval process. I used current and historical documents, reviewed literature, and collected data from participant interviews to triangulate and analyze all the sources of data. Based on my data analysis, JCIDS personnel approved zero programs in less than 250 days and one in 894 days. The median approval time was 506 days. Additionally, the average time to fund, contract, and deliver an ACAT III need was 420 days. However, as Schwartz (2014) suggested, technology changes every 14-18 months or 420-540 days. Consequently, a delivered ACAT III need may not reflect current technology.

Based on data from 30 participants, ACAT III document writers and senior Army leadership from three different Army organizations, I identified six themes: (a) the levels of approval, (b) the number of reviews, (c) should the Chief of Staff of the Army approve an ACAT III need, (d) the value of worldwide staffing, (e) the education and experience

of JCIDS personnel, and (f) absence of an objective goal to reduce the time of the JCIDS process.

Theme 1: The Levels of Approval

The first theme to emerge from the interviews and the organizational documents confirmed the multiple organizational levels and multielement aspect of the ACAT III approval process that I described in the literature review. Twenty-six participants suggested that the multiple organizational levels of approval negatively affects the approval time for an ACAT III document. Participant 9 explained, "An ACAT III document has to go through three organizational levels before we get to the Army Chief of Staff for a final approval." Participant 2 explained that:

> The following JCIDS approval levels exist; Level 1) the Commander of a center of excellence (CoE) approves an ACAT III need document in roughly 337 days; Level 2) a CoE Commander sends the ACAT III document through the ARCIC gatekeeper to the G8 of the Army for AROC approval in approximately 124 days. Accordingly, the G8 is responsible for the Army budget; Level 3) the gatekeeper sends the document from the G8 to the J8 via one star staffing for JROC approval in about 23 days. Accordingly, the J8 is responsible for the joint operation budget; Level 4) the gatekeeper sends the document to the Army Chief of Staff for final approval that takes nearly 22 days.

Eight participants stated, "The Army requirements oversight council (AROC) and the joint requirements oversight council (JROC) are two of the four organizational levels that an ACAT III document must go through. Consequently, the multiple levels of supervision

associated with the multiple levels of approval negatively contribute to the time for an ACAT III need approval" (see Table 1).

Table 1

Median Days for Approval of an ACAT III Need Document by Level

Level	Days
One / CoE	337
Two /AROC	124
Three /JROC	23
Four /CoS	22

Note. ARCIC personal in FY16 recorded the time in days of ACAT III documents through the JCIDS process. The median days were determined from that information. CoE = Center of Excellence, AROC = Army Requirements Oversight Council, JROC = Joint Requirements Oversight Council, and CoS = Chief of Staff of the Army. (ARCIC, 2016), by U.S. Department of the Army, Army Capabilities Integration Center, *JCIDS Workbook*, 2016. No copyright.

Participant 24 stated, "Senior Army leadership could reduce the middle levels of approval and thereby reduce what the participant called the *saw-tooth* effect." Participant 24 continued by stating, "The saw-tooth effect is created by a graphical depiction of the document moving between different levels of Army command." Example; an ACAT III document is approved by a two star general commander of a CoE, then approved for AROC submission by a colonel, an ARCIC gatekeeper. An ACAT III document is then approved by a one star general for AROC staffing, then approved by the head of the AROC who is a two star general, then approved for JROC staffing by a one star general, and finally approved by the head of the JROC, a two star general. Most of the participants agreed that because the ARCIC gatekeeper returns documents back to the document writer less than 5% of the time, the gatekeeper level of approval could be eliminated and

have a positive effect on the approval time of an ACAT III document. Chou, Lu, and Tang (2012) supported the concept of lower levels of approval by suggesting overall performance improvement might be based on focusing time and energy on managing levels of approval as a constraint. Goldratt (1990) suggested that an attempt to neutralize lower levels of approval from making a decision on their own would not work without having predetermined rules. Thus, the reduction of levels of management required for approval should increase throughput of any process.

Theme 2: The Number of Reviews

The second theme to emerge from the interviews was that the approval process is far too complex for the process to produce a need approval in a timely manner. Timely, in the sense that the end users, determined by the ACAT III approval process, have the available current technology that they need to best conduct their mission. However, there was no agreement or even a majority opinion among the participants as to what specific offices or organizations should be removed from the ACAT III approval process. While some participants expressed confidence that redundancy existed throughout the system, participants did not specify where that supposed redundancy existed. Additionally, most participants appeared to lack a real understanding of the purpose or mission of many of the involved organizations as they pertain to the ACAT III approval process. This may be the reason the participants failed to provide specific recommendations and justifications for what organizations or individuals should be excluded or included in the approval process.

Twenty-four of the participants believed that at each level of the ACAT III document approval process there are multiple unnecessary reviews that significantly lengthen the process. Participant 22 explained, "That at the AROC level, sequential reviews from members of the Army requirements resource board (AR2B), Army working group (AWG) and the Army control board (ACB) are completed before the ARCIC gatekeeper sends an ACAT III document to the G8 for final AROC approval. After AROC approval, the ARCIC gatekeeper sends an ACAT III document to the JROC. At the JROC level, sequential reviews are completed by members of the Joint review board (JRB), the Joint working group (JWG), and the Joint control board (JCB) before final J8 approval." (see Table 2). Sixty percent of the participants expressed that the different reviews happen within each level so the personnel within each review may feel their position is relevant to the approval process, even though personnel at each review perform similar functions. Ninety percent of the participants believed that the number of reviews within each level was redundant.

Table 2

ACAT III Median Days Based on ARCIC Value Determination

Group	Days
AWG	52
AR2B	46
ACB	26

Note. The median days determined by ARCIC personnel tracking the ACAT III documents through the JCIDS process during FY16. AWG = Army Working Group, AR2B = Army Requirements Resource Board, ACB = Army Control Board. (ARCIC, 2016), By U.S. Department of the Army, Army Capabilities Integration Center, *JCIDS Workbook,* 2016. No copyright.

Government accountability office (GAO) reports by Pendleton (2012) and Sullivan (2015b) along with a government research report by Schwartz (2014, May) expressed that the multiple number of reviews contribute to the long approval times of an ACAT III need document. Shewhart (1931), Deming (1986), and Green (2012) contended that to obtain quality, it is important that the leadership of an organization meet the need of the customer. Harrington (2005) implied that a reduction in material handling should streamline a process. Accordingly, the reduction in handling time will reduce the amount of time to complete a process.

Theme 3: Should the Chief of Staff of the Army Approve an ACAT III Need?

The third theme to emerge from the data analysis was that many of the participants questioned the logic of the Chief of Staff of the Army as being the final approving authority for the ACAT III approval process. A majority of participants suggested that some commander at a lower level or specific organization might be sufficient. However, again there was no general agreement on who would be the best person to be the final approving authority. Some participants noted that individual commanders of various organizations might have personal biases based on their area of specialty and assignment. I am left with the impression that perhaps the Chief of Staff of the Army is the approving authority, because that person is perceived as being personally above the previously mentioned biases.

Twenty-eight participants suggested that for an ACAT III need document, a lower level of final approval is needed other than the Chief of Staff of the Army (see Table 3). Participant 17 explained, “That the mission of ARCIC is to integrate new products into

Army units that need those new products. Therefore, the Commander of ARCIC is the appropriate position to approve an ACAT III need document."

Participant 14 contended, "To reduce the amount of time for an ACAT III need approval within the JCIDS process, the Commander of a CoE developing the ACAT III need document should approve the ACAT III program." However, Participant 16 stated, "The Major General, Commander of a CoE, is not the best position to approve, because of their possible personal branch of the service preference." Additionally, Participant 16 continued with an explanation, "That if the current Commander of the maneuver center of excellence has a background in the armor branch, the Commander maybe more likely to approve an armor related ACAT III program than if the ACAT III program was a need of the infantry that addressed the DOD approved battlefield gap." Consequently, several participants suggested that the possible bias may be one reason the Chief of Staff of the Army is the final approver of ACAT III need documents.

Table 3

Participant Suggestions for Location of Final Approval for an ACAT III

Location	Number of Participants
G8	6
AR2B	6
CoE	7
CoS	2
ARCIC	7

Note. Locations determined during the Interviews with the Participants. AR2B Army Requirements Resourcing Board, CoE = Center of Excellence, CoS = Chief of Staff of the Army, and ARCIC, Army Capabilities Integration Cell. (ARCIC, 2016), By U.S. Department of the Army, Army Capabilities Integration Center, *JCIDS Workbook,* 2016. No copyright.

Theme 4: The Value of Worldwide Staffing

The fourth theme to emerge from the data analysis is that participants disagreed on the value of the internal process known as *worldwide staffing*. Worldwide staffing is completed by a CoE document writer by loading an ACAT III need document into a database portal to allow Army acquisition personnel at units around the world to review and comment on the document. Twenty-two participants stated that the worldwide staffing does not positively contribute to the final product and that the elimination of all or part of worldwide staffing would reduce the approval time for an ACAT III need document.

Participant 6 explained, "Worldwide staffing allows acquisition personnel at Army units the opportunity to review and provide comments about the document, regardless if the ACAT III need will have any effect on the personnel of their unit." Example; the 10th Mountain Division whose mission is to fight in the mountainous and cold regions of the world, may provide comments on a jungle boot, but never receive it, because the jungle boot is to wear in topical conditions and not appropriate for its mission. Additionally, Participant 6 stated, "The comments received from worldwide staffing maybe administrative as to format and grammar or critical in nature suggesting the ACAT III capability may need to have different specifications to accomplish the mitigation of the associated DOD approved battlefield gap." Participants disagreed on the number and type of Army units that should be included in the worldwide staffing process. Although, all the participants agreed that worldwide staffing for an ACAT III need should not be the same as an ACAT I need, a tank."

Participant 4 explained, “The ARCIC gatekeeper provides the initial list of units to the CoE document writer to be included in worldwide staffing.” However, “the CoE document writer adds to the list based known stakeholders.” Participant 6 suggested, “To reduce the number of units on worldwide staffing, the CoE document writer should only use the stakeholders that provide information on mandatory DOTmLPF-P sections of an ACAT III document.” Sixty percent of the participants suggested that based on the number of personnel providing comments through worldwide staffing, the review process of those comments may take weeks of time to accomplish. Thus, the amount of time needed to address the comments, delays the completion of an ACAT III need document approval process. The participants emphasized, “A document writer must address all of the comments from all the acquisition personnel from the worldwide staffing Army units regardless of the value of those comments.” The participant’s additionally stated, “If the document writer does not address the validity of each comment in writing, then the ARCIC gatekeeper will return the document back to the document writer to complete the reviews of the comments. This will delay the approval of the ACAT III need document.”

Five participants suggested that the ARCIC gatekeeper established an arbitrary time of 30 days for Army unit acquisition personnel to respond to the worldwide staffing. They continued by stating, “The thirty days is an estimate and may change based on Army unit acquisition personnel requesting an extension of time.” Participant 1 suggested, “The Army has self-imposed hurdles of redundancy with no stick or carrot as an incentive to reduce the number of units or reduce the time to respond within worldwide staffing.”

Participant 7 claimed, "Personnel at any unit in the world could wear a jungle boot, but the jungle boots are for personnel in specific units conducting specific missions," for example, the 75th Ranger Regiment. "Therefore, why send an ACAT III need document for jungle boots out to all Army units?" Participant 20 claimed, "That conducting worldwide staffing with all units aids in the development of the ACAT III program document." Participant 20 explained, "That obtaining different perspectives from all units about an ACAT III document might enhance the document writer's ability to improve the quality of the document. Thus, have a positive effect on the approval time of that ACAT III need document."

Participant 11 suggested, "The Army leadership could use the time-phased force deployment data (TPFDD) to select the Army units for worldwide staffing. Thus, reduce the number of reviews from worldwide staffing." The TPFDD lists the Army units that have similar missions in similar regions of the world. Therefore, avoid having Army units on worldwide staffing that would not receive the ACAT III need.

Sixty percent of the participants suggested using key stakeholders, who are members of the team, in developing the ACAT III need document in worldwide staffing. This change would reduce the review time for the document writer. Thus, using only the key stakeholders in worldwide staffing, should improve the approval time of an ACAT III need document by reducing the amount of comments generated through worldwide staffing, (see Figure 8).

Key ACAT III program stakeholders

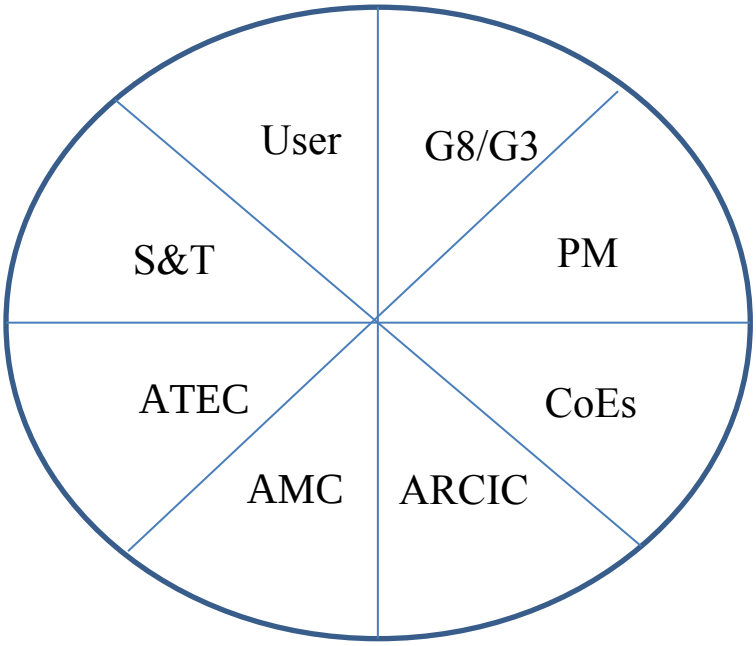

Figure 8. Shows the key stakeholders that support the JCIDS requirement document development and approval process. User is the unit warfighter specific to the ACAT III need. CoE is the ACAT III document writer. ARCIC is the gatekeeper of the requirement documents and moves the document through the JCIDS process. G8/G3 is the AROC ACAT III approving authority. After ACAT III approval, PM is the acquisition executive to acquire the ACAT III need. ATEC is the testing agency for the ACAT III need. S&T is the research and development agency for the ACAT III need. AMC is maintenance executive for the ACAT III need, by Participant 19, U.S. Department of the Army, *Key ACAT III Program Stakeholders,* 2016, No copyright.

Participant 19 explained the following:

> The user is the U.S. warfighter. The CoE personnel are the document writer and their military supervisor. The ARCIC personnel included the gatekeeper whose responsibilities are to integrate the ACAT III product across all Army units and move an ACAT III document through the JCIDS approval process. The G8 and G3 personnel are key personnel in the approval process with the understanding of the Army budget and operations respectively. After the approval of an ACAT III

> document, Program Management (PM) personnel are responsible to contract and acquire the ACAT III need. The ATEC personnel are responsible to test the ACAT III product to the specifications identified in the capability production document (CPD). The S&T personnel are responsible for research and development of ACAT III products to validate the product's technology readiness level. AMC personnel maintain the capability of the ACAT III product throughout the products life cycle.

Participants suggested that the collaboration between the document writer and the key stakeholders should reduce the number of reviews, reduce the friction between the different stakeholders, and have a positive effect on the approval time of an ACAT III need document. Participant 14 stated, "The key stakeholders should work together to write an ACAT III need document. Therefore, when the key stakeholders are involved in writing an ACAT III document, why have worldwide staffing with other Army units?"

In closing, 60% of the participants suggested that based on the number of personnel providing comments through worldwide staffing, addressing those comments in writing may take weeks and delay the approval time of an ACAT III need document. Elnadi and Shehab (2015) suggested that building customer and supplier relationships is one enabler that is vital for the successful application of lean Six Sigma product-service systems. Goldratt and Cox (1984) stated that minimizing functions while improving quality within a process should increase throughput of that process. Participant 27 stated, "Addressing critical comments regardless of the number does make an ACAT III

document better. Conversely, addressing noncritical comments provides very little value and wastes time."

Theme 5: The Education and Experience of JCIDS Personnel

The fifth theme to emerge from the data analysis was that the document writer caused delays in the approval of an ACAT III need document due to the document writer's lack of sufficient knowledge of the JCIDS approval process. Additionally, the lack of experience and knowledge to write with a clear objective for an ACAT III need document, created delays in the approval time of an ACAT III need document. Other than attendance and completion of the level II or higher defense acquisition workforce improvement act (DAWIA) certification training, no other specific training exists.

Twenty-four participants suggested that the knowledge and experience of a document writer affects the amount of time for approval of an ACAT III need document by several months. Participant 18 explained, "The ability to understand and use military acronyms correctly denotes the importance of the document writer to have a military background." Thus, to write and ACAT III need document, it is important that the document writer had prior experience in the Army. Participant 18 explained, "Being a person that knows how to use an ACAT III need, does not provide you the skills to write an ACAT III need document."

Participant 7 stated, "A document writer should have the skills to use critical thinking with the ability to write an ACAT III need document regardless of their field experience." Participant 7 defined critical thinking by stating, "A document writer should be able to apply, analyze, and evaluate information to write using their own thoughts in

an ACAT III need document and not just cut and paste from previous documents." Additionally, Participant 7 asked, "How can a document writer learn to use critical thinking?"

Participant 8 stated, "Army Regulation 350-1, currently defines the type of acquisition training required for Army and civilian personnel (AR350, 2014). However, the manual does not address the document writer's need to have a skill to write an ACAT III need document." Berg and Karlsen (2012) suggested that the training for a trainee be specific to the work challenges of that trainee. Participant 8 explained, "The document writer should know how to write an ACAT III need document in the format and expectations established by ARCIC." Subsequently, "the AR350-1 manual does not define the format or expectations for writing an ACAT III need document."

Participant 12 suggested, "The ARCIC leadership should provide initial and continuous education for the document writers to allow the document writers to obtain current understanding of the requirements for writing and submitting documents through the JCIDS process." Accordingly, "The ARCIC leadership of the JCIDS process should develop online updates and tutorials of changes that might increase the knowledge of the document writers within the JCIDS process. Thus, reducing the time to approve an ACAT III need document."

Theme 6: Absence of an Objective Goal to Reduce the Time of the JCIDS Process

Participants implied that there is no objective goal defined for tracking or reducing the approval time of an ACAT III need document in the JCIDS approval process. The application of the theory of constraints (TOC) may be to improve the overall

organization by concentrating on improving bottlenecks within a process (Goldratt, 1990). Therefore, defining the goal is critical to the successful revision of any process. None of the participants suggested that Army personnel are engaged in developing an objective goal to reduce the time of the JCIDS process. Although, three participants implied that a group of personnel, under the direction of the Chief of Staff of the Army, might be addressing possible issues of the current JCIDS process. During interviews with participants, I confirmed the existence of the group. However, the members of that group are under a non-discloser agreement and I was not able to obtain any information concerning development of strategies that might reduce the approval time of an ACAT III need document in the JCIDS process.

The data obtained from the participants and from reviews of current and historical documents was analyzed through the lens of the theory of constraints (TOC). As a result the outcomes of the research, specifically the themes, are in a form of identified constraints within the JCIDS approval process for ACAT III need documents. These identified constraints reflect the content of the TOC and the process promulgated by its author Dr. Goldratt. Specifically, a process to identify time constraints to the benefit of any process and any organization (Goldratt, 1990).

Application to Professional Practice

This study was an initial exploration of possible strategies that may be used by senior U.S. Army Commanders and the U.S. Secretary of Defense. The purpose of this qualitative study was to explore possible strategies senior U.S. Army Commanders may use that might reduce the JCIDS approval time of an ACAT III military need. The actual

development of a comprehensive strategy will require more extensive, broader and more in-depth research and compilation than this initial qualitative study.

U.S. senior military leadership have had increasing concerns that U.S. warfighters are not using products with current technology because of the length of time for an ACAT III need approval due to the military structure (Sullivan, 2015b; Schwartz, 2014). As senior U.S. Army Commanders review findings from this study, they may develop strategies that might reduce the approval time in JCIDS of an ACAT III need document. Subsequently, have a positive effect on battlefield efficiency, military and civilian JCIDS personnel and U.S. citizens.

Applying a strategy to address the levels of approval in the JCIDS process might reduce the approval time of an ACAT IIII need document that may lead to the ability to acquire products that use current technology. Thereby, provide the U.S. warfighter an increased capability to recognize and address a threat on the battlefield. Moreover, that battlefield could be on any city street in the world. Pendleton (2012) suggested that management should understand the importance of using current technology when improving the efficiency of any system or process.

Implementing a strategy to minimize the number of reviews for an ACAT III document in the JCIDS process might improve the approval time of an ACAT III need document that may reduce the cost of upgrading to the next generation of technology. Pendleton (2012) implied that upgrading to the next generation of technology is easier than trying to upgrade three or more generations of technology. If an ACAT III has current technology, upgrading to the next generation is less expensive than trying to

upgrade two or more generations. If an ACAT III product was required to upgrade three or more generations of technology, that ACAT III product might require redesigning. Consequently, make the upgrade expensive or necessitate a submission for a new ACAT III need document. Thereby, causing the acquisition of that new ACAT III need to start from the beginning of the JCIDS process.

All participants interviewed for this study avowed to the importance of improving the JCIDS approval process, but none of the participants suggested any comprehensive strategy for the improvement. After reviewing the literature in conjunction with Section 2 and results of the data in Section 3, I found no previous studies that address the purpose of this study. Therefore, through this initial study, I recommend to senior U.S. Army Commanders six strategies they might develop that may reduce the JCIDS approval time of an ACAT III need document.

First, I suggest that senior U.S. Army Commanders develop a comprehensive strategy to identify and implement an objective goal for reducing the amount of time for an ACAT III need document in the JCIDS approval process. None of the participants knew of any objective goal for improving the time of the JCIDS process. Defining the goal is critical to the successful revision of a process (Goldratt & Cox, 2014). It is important that senior U.S. Army Commanders establish a goal to determine parameters and metrics that may be used by their personnel to identify possible constraints in the JCIDS process that when addressed might reduce the approval time of the JCIDS approval process for an ACAT III need document.

Second, I suggest that senior U.S. Army Commanders develop a comprehensive strategy to identify the appropriate level of approval for an ACAT III need document. Analysis of the research data supports that multiple levels of approval negatively impacts the approval time of an ACAT III need document in the JCIDS approval process. Senior U.S. Army Commander's might consider that an ACAT III need document should not have the same approval level as an ACAT II or I document. Thus, determine an appropriate level of approval in the JCIDS approval process.

Third, I suggest that senior U.S. Army Commanders develop a comprehensive strategy to determine the optimum number of reviews necessary to approve an ACAT III document in the JCIDS approval process. Analysis of the research data supports having three different groups, Army Requirements Resource Board (AR2B), Army Working Group (AWG), and the Army Control Board (ACB) conduct sequential reviews of an ACAT III need document prior to final AROC approval, negatively impacts the approval time of an ACAT III document in the JCIDS approval process. None of the three Army supplemental review groups, AR2B, AWG, ACB, is identified in the JCIDS manual (JCIDS, 2015).

Fourth, I suggest that senior U.S. Army Commanders develop a comprehensive strategy to determine if the Chief of Staff of the Army should approve an ACAT III need document. The analysis of the data supports a lower level of approval of an ACAT III need document. Although, the participants could not agree on who should approve an ACAT III need document (see Table 3).

Fifth, I suggest that senior U.S. Army Commanders develop a comprehensive strategy to determine the appropriate use of worldwide staffing. The analysis of the data supports that a document writer addressing all the comments generated through worldwide staffing, may cause a negative impact on the approval time of an ACAT III document in the JCIDS approval process. Army leadership should consider a method of reducing the number of comments generated through worldwide staffing by restricting the number of units in worldwide staffing.

Sixth, I suggest that senior U.S. Army Commanders develop a comprehensive strategy to enhance the training of JCIDS personnel to improve the development an ACAT III need document. JCIDS personnel, for example, a document writer, should be able to use critical thinking to apply, analyze, evaluate, and record information. Army leadership should provide document writers initial training in writing an ACAT III need document and continuous training that may provide information on any required changes of the need document.

Senior U.S. Army Commanders may reduce the time for an ACAT III need document through the JCIDS process by exploring one or all of the six strategies. The reduction of time for an ACAT III need approval may allow for incorporation of current technology when delivering the ACAT III need to the U.S. warfighter. The improvement may generate a positive effect for the document writer through increased education and abilities. The resulting improvement could enhance the U.S. warfighter's ability to identify and address the enemy. Thus, enhancing a warfighter's efficiency that may provide a positive social change, leading to a safer community for U.S. citizens.

Implications for Social Change

The development of strategies to reduce an ACAT III need approval through the JCIDS process may provide enhanced U.S. warfighter's battlefield efficiency and potentially contribute to national security therefore improved safety for U.S. citizens. The reduced time for approval may generate a cost savings for the U.S. tax payer. The exploration of suggested strategies may allow senior U.S. Army Commanders to promote a learning environment for the JCIDS personnel, document writers, with training in document writing and critical thinking. Thereby, provide opportunities for document writers to develop into leaders within the organization and their overall community.

Recommendations for Action

I recommend the following six potential strategic considerations for senior U.S. Army Commanders to address the constraints identified by the themes that may reduce the approval time of an ACAT III need document in the JCIDS approval process.

Strategy 1: Define and implement an objective goal to reduce the approval time of an ACAT III need document in the JCIDS approval process. Goldratt and Cox (2014) stated that the goal is the key to defining and measuring the throughput of a process. Army leadership may consider the objective goal to include measurable decrements of time anticipated of the improvement efforts for the JCIDS approval process for an ACAT III document. The goal may include the anticipated amount of time to implement the efforts to obtain the measurable decrements of time in the JCIDS approval process.

Strategy 2: Simplify and decrease redundancy in the process by reducing or eliminating the levels of review. The strategy might include the determination of the

appropriate level of approval for an ACAT III need document in the JCIDS approval process. Hence, the evaluation to avoid the saw-tooth effect caused by the document moving between different levels of approval.

Strategy 3: Determine the optimum number of reviews necessary to approve an ACAT III need document in the JCIDS approval process. The strategy may address the reasoning behind having personnel in an Army Requirements Resource Board (AR2B), Army Working Group (AWG), Army Control Board (ACB), Joint Review Board (JRB), Joint Working Group (JWG), and a Joint Control Board (JCB) approve an ACAT III need document prior to Chief of Staff of the Army final approval. Army leadership may consider eliminating required approvals that are redundant, or provide limited value. Army leadership may consider combining groups that can approve an ACAT III need document for both the Army and Joint efforts.

Strategy 4: Determine if the Chief of Staff of the Army should approve an ACAT III need document in the JCIDS approval process. Army leadership may consider an alternative person, G8, ARCIC Commander, or CoE Commander. Thus, determine the appropriate person to approve an ACAT III need document in the JCIDS approval process.

Strategy 5: Determine the value of worldwide staffing. Army leadership might consider allowing the document writer to create a key stakeholder group that could assist in writing an ACAT III need document (see Figure 8). Accordingly, identify the appropriate number of units to include the key stakeholders to should participate in worldwide staffing. If key stakeholders assist in writing an ACAT III need document and

be the majority of the units in worldwide staffing, this should reduce the number of critical comments received in worldwide staffing.

Strategy 6: Enhance the training of JCIDS personnel to ensure that all current and future personnel, such as document writers, have the necessary skills, training, and general preparation to contribute to an efficient approval process. Army leadership might consider course description, training on writing an ACAT III document, method and length of training, location of the training, the number of training sessions offered, and a method for continuous training. Army leadership might consider training ACAT III document approvers assigned to the JCIDS approval process.

I will provide senior U.S. Army Commanders with a copy of this study so they may be informed of my findings and recommendations. This study might be beneficial to CoE Commanders, document writers, and ARCIC personnel. My intent is to publish this study for the broader community via the resources of the institution.

Recommendations for Further Research

This study is the first of its kind to research the JCIDS approval process. Senior U.S. Army Commanders do not have an objective goal to reduce the approval time of an ACAT III document in the JCIDS approval process. Therefore, I suggest using the findings from this study and conduct a qualitative single case study to explore the development and implementation of an objective goal. The data in this study represented one Army CoE. Thus, I suggest conducting a qualitative multiple case study to explore the other five Army CoE workers and leadership for possible strategies that might reduce the approval time of an ACAT III need document within the JCIDS approval process.

The data from this study showed that the JCIDS process is one of three processes, JCIDS, PPBES, and DAS, that are linked together that government personnel use to approve, fund, acquire, and deliver an ACAT III need to the U.S. warfighter. Therefore, I suggest conducting a qualitative single case study on the defense acquisition system (DAS) contracting process to explore possible strategies that may reduce the time to contract and deliver an approved ACAT III need to the U.S. warfighter.

Reflections

My aspiration for this study started when I was instructing military personnel on the JCIDS process at the United States Command and General Staff College. I saw firsthand the inconsistencies for approving an ACAT III need document. My motivation for this study was the desire to improve my understanding of the current ACAT III program approval process along with determining if possible strategies exist to reduce the approval time for an ACAT III need document in the JCIDS process.

As I started researching documents and conducting semistructured interviews for this study, I realized why I was the first one to address this topic through a doctoral study. This study required a varied amount of knowledge and experience; such as, I had to obtain concurrence to conduct the study from two organizations; the Walden University IRB and AHRPO, Army Human Research Protection Office. I had to understand that this study is not specific to the military, but could be used by the broader business community. Furthermore, I had to understand the topic and be fluent in the military acquisition language to conduct the research. I had to know the appropriate questions to ask, as well as how to ask those questions. I have a top-secret clearance. I have previous

work experience with personnel within the organizations that develop and direct the movement of documents through the JCIDS approval process. Those connections, the clearance, and the understanding of the JCIDS process, afforded me the opportunity to conduct research at three different military locations.

The Doctor of Business Administration (DBA) academic process was challenging. I did not anticipate the amount of effort required. Although, my topic never changed, changing my chair and my conceptual framework for my study was an opportunity to learn. Through this experience, I now view correspondence and information from an intellectual perspective. These challenges presented me with lessons learned as I completed the doctoral process.

Conclusion

The purpose of this qualitative single case study was to explore strategies that United States senior Army Commanders may use that might reduce the JCIDS approval time for an ACAT III need. Thirty JCIDS personnel, document writers and U.S. Army Commanders participated in the study. Data sources included: (a) reviews of five current ACAT III programs, (b) reviews of 10 historical ACAT III program documents, and (c) 30 semistructured interviews. From the analysis of the data, six themes emerged, (a) the levels of approval, (b) the number of reviews, (c) should the Chief of Staff of the Army approve an ACAT III need?, (d) the value of worldwide staffing, (e) the education and experience of JCIDS personnel, and (f) absence of an objective goal to reduce the time of the JCIDS process. This section presented the results of the findings and themes based on

the analysis. Additionally, this section offered implications for social change, recommendations for action, and suggestions for future research.

Based on the research data, the median amount of time to approve and ACAT III need document using the JCIDS process is approximately 506 days. The specific business problem is that senior U.S. Army Commanders lack strategies they may use that might reduce the JCIDS approval time for an ACAT III military need. The conceptual framework used for this study was through the lens of the theory of constraints (TOC). Goldratt (1990) explained how reduction or elimination of a constraint should increase throughput of a process. Although, constraints may exist such as governmental regulations, levels of approval, number of reviews, or organizational culture, based on the analysis of the data, I recommended six possible strategies that senior U.S. Army Commanders may use that might reduce the approval time of an ACAT III need document in the JCIDS approval process.

By developing and implementing one or all of these six recommended strategies, senior United States Army Commanders may reduce the approval time of an ACAT III need document in the JCIDS process. Thereby, generating a possible cost savings for United States tax payers. While, providing a positive effect on the JCIDS process and JCIDS personnel that might benefit future generations of United States government personnel, United States warfighters, and United States citizens.

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Appendix A

Permissions to Use Figures

Figure 1. JCIDS as a component of the total DOD acquisition system.

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Figure 2. Complete JCIDS process.

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Figure 3. JCIDS overview flow from requirements generation.

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Figure 4. Interaction between the requirement generation and acquisition process.

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Figure 5. Total quality management model major features.

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Figure 8. Key ACAT III program stakeholders.

Appendix B

Interview Protocol Guide

A) Introduce yourself to the interview participant. I explained the purpose of the study as a Doctoral Business Study as a student at Walden University. JCIDS started in 2003. The JCIDS process and is a component of the DOD acquisition system. The purpose of the study is to explore strategies for senior commanders that may reduce the time of a JCIDS ACAT III needs approval.

B) I will conduct recorded interviews, reviewing current ACAT III documents and reviewing historical ACAT III documents. I have coordinated with the three locations and have a familiar location to conduct the interviews and review documents. I will explain to the participant their rights using the Inform Consent sheet.

C) I have open-ended questions to ask the interviewees as well as for the single case study. I will follow Yin's (2014) five keys to a successful interview:

   a. Ask good questions
   b. Be a good listener
   c. Stay adaptive
   d. Have a good grasp of the issues
   e. Avoid biases.

   I will reduce bias by asking the questions without personal insight. In addition, I will reduce bias by not adding personal insight into the answers or comments associated with participant's interviews. The questions are:

   1. What are the constraints that add time to the current JCIDS process for an ACAT III needs approval?

   2. What are the current strategies used by senior U.S. Army Commanders to obtain a JCIDS ACAT III needs approval as quickly as possible?

   3. What strategies could senior U.S. Army Commanders use to reduce the time of a JCIDS ACAT III needs approval?

   4. What other areas of the JCIDS ACAT III process would you research that may reduce the time of an ACAT III needs approval?

I will thank the participant and confirm with the participant the accuracy of the interview data. I will inform the participant after analyzing the data, I will conduct member checking of the analysis.

Appendix C

Themes and Descriptive Codes

I conducted a categorical aggregation using initial descriptive codes to analyze the data (Miles, Huberman, & Saldana, 2014). I determined the initial descriptive codes based on practice interviews, my conceptual framework, and my literature review. The initial descriptive codes are constraint, need, stovepipe, stakeholders, education, bureaucracy, and documents.

Constraint: Defined as any event or action that restricts or prohibits throughput (Goldratt & Cox, 2014)

Need: Define a required element and not a required element in the process (JCIDS, 2015)

Stovepipe / One View: Acknowledge a specific process and avoid one organization from manipulating that process (CJCSI, 2015)

Stakeholder: A person that has an interest or concern in a process (JCIDS, 2015)

Education / Training / Knowledge / Experience: Fact, information, and skills one possess through understanding of the subject matter (JCIDS, 2015).

Bureaucracy / Levels: Separation of functions in a hierarchical structure in implementing controls (CJCSI, 2015)

Documents: A written, printed, or electronic matter that provides information or evidence or that serves as an official record. A requirement writer can use one of several documents, CDD, ONS, JUNS, and CPD (JCIDS, 2015).

Appendix D

Department of Defense and U.S. Military Acronyms

ACAT	Acquisition Category
AHRPO	Army Human Research Protection Office
ARCIC	Army Capabilities Integration Center
AROC	Army Requirements Oversight Council
ARI	Army Research Institute
CDD	Capabilities Development Document
CPD	Capabilities Production Document
CoE	Center of Excellence
CoS	Chief of Staff of the Army
DAS	Defense Acquisition System
DAU	Defense Acquisition University
DAWIA	Defense Acquisition Workforce Improvement Act
DOD	Department of Defense
DoDI	Department of Defense Instruction
DOTmLPF	Doctrine, Organization, Training, material, Logistics, Personnel, Facilities
GAO	Government Accountability Office
JCIDS	Joint Capability Integrated Development System
JROC	Joint Requirements Oversight Council
JUNS	Joint User Need Statement
KPP	Key Performance Parameter
MCoE	Maneuver Center of Excellence
MDAP	Major Defense Acquisition Program
ONS	Operational Need Statement
PPBS	Planning Programming and Budget System
USD AT&L	Under Secretary of Defense for Acquisition Technology & Logistics
USSOCOM	United States Special Operations Command