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**ANALYSIS OF THE PURCHASING STRUCTURE, ROLES
AND AUTHORITY WITHIN LARGE, PRIVATE-SECTOR
ORGANIZATIONS AND THEIR POTENTIAL APPLICATIONS
AND BENEFITS WITHIN AIR FORCE CONTRACTING**

December 2020

By: Casey C. Boyle
Brad M. Rajchel
Christopher A. Ruiz

Advisor: William A. Muir
Co-Advisor: Kathryn J. Aten
Co-Advisor: Daniel J. Finkenstadt

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FORCE CONTRACTING**

Casey C. Boyle, Captain, United States Air Force
Brad M. Rajchel, Captain, United States Air Force
Christopher A. Ruiz, Captain, United States Air Force

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December 2020**

Approved by: William A. Muir
Advisor

Kathryn J. Aten
Co-Advisor

Daniel J. Finkenstadt
Co-Advisor

Rene G. Rendon
Academic Associate, Graduate School of Defense Management

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LIST OF ACRONYMS AND ABBREVIATIONS

AFFARS	Air Force Federal Acquisition Regulation Supplement
AFICC	Air Force Installation Contracting Center
AFIMSC	Air Force Installation and Mission Support Center
AFLC	Air Force Logistics Command
AFLCMC	Air Force Life Cycle Management Center
AFMC	Air Force Materiel Command
AFNWC	Air Force Nuclear Weapons Center
AFRL	Air Force Research Laboratory
AFSC	Air Force Sustainment Center
AFTC	Air Force Test Center
APDP	Acquisition Professional Development Program
B2B	Business to Business
B2G	Business to Government
CAPS	Center for Advanced Purchasing Studies
CEO	Chief Executive Officer
CPO	Chief Purchasing Officer
DFARS	Defense Federal Acquisition Regulation Supplement
FAR	Federal Acquisition Regulation
HCA	Head of Contracting Activity
MAJCOM	Major Command
NIGP	National Institute of Governmental Purchasing Research
OFPP	Office of Federal Procurement Policy
PK	Contracting
RCC	Regional Contracting Center
SAF/AQC	Secretary of the Air Force for Acquisition
SBIR	Small Business Innovation Research
SCO	Senior Contracting Officials
SF	Standard Form
TINA	Truth in Negotiations Act
USC	United States Code

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I. INTRODUCTION

This chapter provides the purpose and importance of this research, the research questions, and the outline of this report.

A. PURPOSE

The purpose of this research is to investigate the structure, roles, and authority of the purchasing functions within large, private sector organizations and to compare identified practices, trends, and relationships to the U.S. Air Force's purchasing organization. Specifically, this research is being conducted on behalf of the sponsor, Heidi Bullock, director of contracting, Headquarters Air Force Materiel Command (AFMC), Wright-Patterson Air Force Base, OH. Bullock is responsible for the 3,900-person AFMC contracting workforce, which executes a \$67 billion annual budget to procure major Air Force weapon systems, technologies, research and development, and other contracted services and commodities (U.S. Air Force, 2017). The goal of this research is to provide an executive summary and technical report with recommendations for Air Force contracting, along with the complete thesis and analysis, to Bullock for her use to implement changes and make improvements within AFMC's six contracting centers and core mission areas. It is important to note the term *purchasing organization* is synonymous with purchasing function, procurement function, and procurement organization throughout this report.

B. IMPORTANCE OF THIS RESEARCH

General Arnold W. Bunch, Jr., the senior ranking military member within AFMC, recognized the criticality and urgency of maintaining the most effective and well-structured military force, including the structure and capabilities of the Air Force's purchasing and procurement function:

AFMC is the most important Major Command (MAJCOM) in the U.S. Air Force. It needs to become the most agile and efficient organization to achieve the National Defense Strategy and to get the Air Force we need. Only if this command works and this command succeeds can the Air Force succeed. AFMC built the most powerful Air Force in the world, and our

nation is depending on us to build the Air Force we need to secure our nation's future. However, our adversaries have caught up or exceeded our capabilities in many areas. Therefore, our command must change at the speed of relevance to counter these threats and build and sustain the most lethal and ready Air Force. I have directed a command-wide initiative to ensure that AFMC has the best structure, resources, and culture to support the National Defense Strategy. This is the AFMC we need! (AFMC, n.d.-a, "From the Commander" section)

As industry adapts to ever-changing market conditions, the U.S. Air Force must evolve and reorganize its internal structure to foster innovation and stay ahead of the dynamic threats to national security. Air Force Contracting (SAF/AQC) continually restructures itself to streamline decision-making and optimize purchasing procedures to best serve the warfighter, both proactively and reactively. An example of AFMC's organizational restructuring can be seen in Figures 1 and 2. In Fiscal Year (FY) 2012, AFMC reorganized its contracting structure as a part of several initiatives set to achieve congressionally-mandated budget reductions. The effectiveness and efficiency of the organization was assessed following the restructure to ensure that the command's ability to achieve its objectives and meet command responsibilities was not jeopardized (Snyder et al., 2013). To maximize efficiency, members must have a clear idea of both the mission of the organization and tasks of individual positions to align vision with action. A literature review into the research on purchasing organizations and design indicates that the purchasing organization and its role within a larger organization play a key role in the firm's success and have a "significant impact" on the firm's competitive position within the market (Glock & Hochrein, 2011, p. 173).

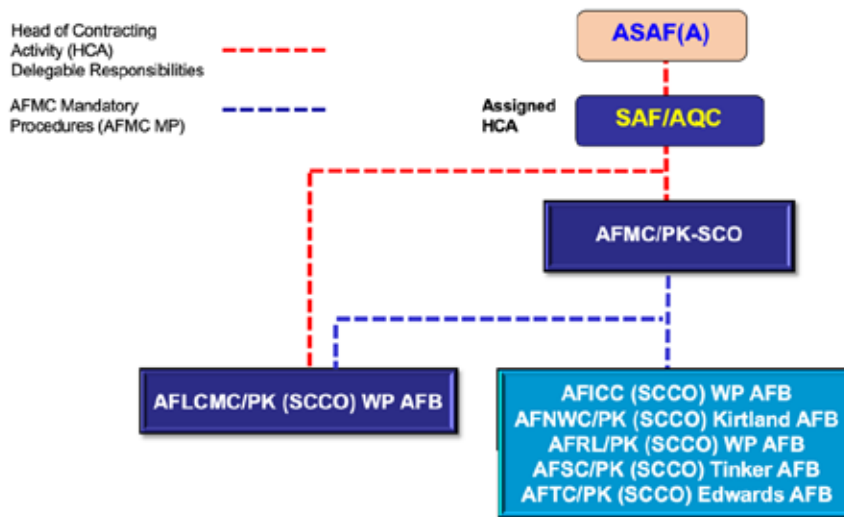


Figure 1. Previous AFMC Organizational Structure. Source: S. Manuel (email to author, July 7, 2020).

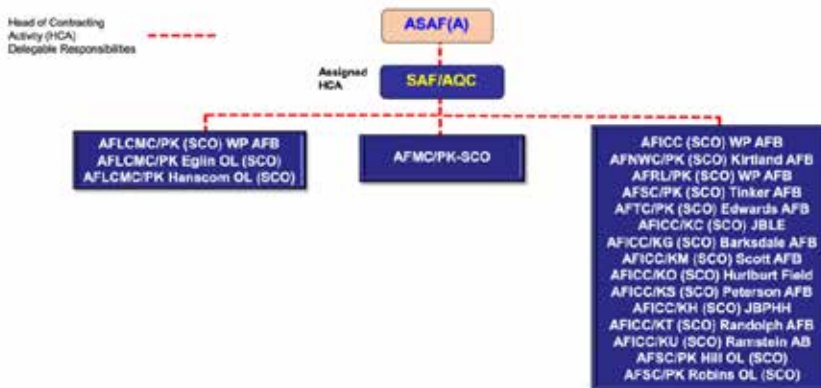


Figure 2. Revised AFMC Organizational Structure. Source: S. Manuel (email to author, July 7, 2020).

In FY 2020, AFMC had a spend budget of \$67 billion, which equaled more than one third of total Air Force spending for the year (Alia-Novobilski, 2020). The overall spending responsibility and the more than 85,000 personnel who work in AFMC highlight

the importance and responsibility of the organization. As the operating environment becomes more complex, it is imperative to the warfighter that supporting organizations limit bureaucracy, break through organization inertia, streamline decision-making processes, and design their organizations around limiting factors and risks of their operating environment. The Air Force contracting community would benefit from a fresh perspective regarding its organizational tactics as the community continuously assesses its current state and works to identify future areas of improvement. A review of private companies that operate in different environments enables the researchers to observe how companies structure themselves, evaluate their structure based on their operating environments, and make comparisons between their organizations and Air Force contracting organizations. By proactively researching organizational structure and design, both internal and externally, Air Force contracting organizations may be better equipped with information and strategies that allow for the anticipation of changing requirements and organizational restructures (as seen in FY 2012) and will equip Air Force leaders with best practices and lessons learned from private industry.

C. RESEARCH QUESTIONS

The objective of this research project is to answer the following primary question:

1. How do the Air Force contracting structure, roles, and authorities compare with the purchasing functions of private sector organizations?

Secondary research questions to answer are as follows:

2. What are the advantages and disadvantages of the current Air Force contracting structure within AFMC?
3. How can the Air Force better organize the its purchasing structure, roles, and authorities?
4. How do the private sector organizations establish roles and authorities within the purchasing functions?

D. OUTLINE OF THIS REPORT

The following chapter reviews the background of federal government contracting, the AFMC organization, federal government contracting warrants, and the current AFMC contracting structure. In Chapter III, a literature review is presented to help readers better understand the material being researched and provides the framework for how the research is conducted, along with its limitations. Chapter IV provides the methodology used, and Chapter V provides the results of the research. Chapter VI discusses our conclusion, recommendations and applications, and areas for further research.

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II. BACKGROUND

This chapter provides background information instrumental to understanding the role of contracting and the role of the AFMC/PK department within the acquisition process as it pertains to this research. It provides an overview of the history of AFMC, the mission and vision of both AFMC and AFMC/PK, and the current organizational design and structure for AFMC/PK. Additionally, this chapter briefly outlines the Federal Acquisition Regulation (FAR) and defines the various levels of contracting authority, contracting officer roles, and the contracting officer warrant process.

A. AIR FORCE MATERIEL COMMAND HISTORY

AFMC's heritage can be traced back as early as 1917 to McCook Field, a World War I-era installation located in Dayton, OH, which focused on experimental engineering (AFMC, n.d.-b). By 1926, the predesignated Air Corps Materiel Division became the "largest branch of the Air Corps ... responsible for all aircraft and equipment research, development, procurement, maintenance, supply, and flight tests" (AFMC, n.d.-b, para. 1). Throughout the years, AFMC has had several different names and organizational structures. On July 1, 1992, the then-Air Force Logistics Command (AFLC) and Air Force Systems Command were merged together to form AFMC. The new command joined the expertise of both organizations; refocused the new organization's efforts of providing worldwide logistics support through maintenance, modification, and overhaul of weapon systems; and offered expertise in the fields of science, technology, research, development, and testing. According to the AFMC Office of History, AFMC currently executes approximately one third of the Air Force's budget, supports nine host bases, and is responsible for both Air Force medical and test pilot schools (AFMC, n.d.-b).

B. AIR FORCE MATERIEL COMMAND CENTERS

AFMC, which is headquartered out of Wright-Patterson Air Force Base, OH, focuses its organizational assets around its mission and vision statements by performing in six core mission areas: Discovery and Development, Test and Evaluation, Life-Cycle

Management, Sustainment and Logistics, Installation and Mission Support, and Nuclear Systems Management.

AFMC (2020) is responsible for

Powering the world's greatest Air Force. ... AFMC develops, delivers, supports and sustains war-winning capabilities.

AFMC delivers war-winning expeditionary capabilities to the warfighter through development and transition of technology, professional acquisition management, exacting test and evaluation, and world-class sustainment of all Air Force weapon systems. From cradle-to-grave, AFMC provides the work force and infrastructure necessary to ensure the United States remains the world's most respected air and space force. (para. 3)

AFMC's vision statement is "Innovative Airmen, trusted and empowered, creating agile, cost-effective war-winning capabilities for the Nation" (Air Force Materiel Command, 2020).

According to AFMC (2020), its six core mission areas and one additional specialized unit of AFMC are (see Figure 3):

Discovery and Development: The Air Force Research Laboratory (AFRL) is dedicated to the discovery, development, and integration of warfighting technologies for air, space, and cyberspace forces. The laboratory provides technical services to joint acquisition, logistics, aerospace medicine, and operational warfighting communities.

Test and Evaluation: The Air Force Test Center (AFTC) conducts developmental test and evaluation missions of air, space, and cyber systems. AFTC directs the developmental test and evaluation of air, space, and cyber systems for military services other than the Air Force, other U.S. government agencies, and international partners. This is in addition to AFTC operating the U.S. Air Force Test Pilot School.

Life-Cycle Management: Focusing on cradle-to-grave acquisitions, the Air Force Life Cycle Management Center (AFLCMC) delivers affordable and sustainable warfighting capabilities to the United States and international partners. The AFLCMC is the single center within the Air Force responsible for life-cycle management of all aircraft, engines, munitions, and electronic systems.

Sustainment and Logistics: The Air Force Sustainment Center (AFSC) provides sustainment and logistics readiness to the Air Force. The center

provides logistics and sustainment services to the warfighter through depot maintenance, supply chain management, and installation support.

Installation and Mission Support: The Air Force Installation and Mission Support Center (AFIMSC) is the intermediate-level headquarters responsible for providing installation and mission support capabilities to the Air Force. The AFIMSC, specifically, provides integrated management, resourcing, and combat support operations for Air Force personnel, base communications, civil engineering, contracting, and other careers.

Nuclear Systems Management: The Air Force Nuclear Weapons Center (AFNWC) delivers nuclear capabilities used to deter foes and assure global security. The AFNWC acquires and sustains nuclear weapon systems and provides nuclear materiel management in support of the Air Force Global Strike Command.

Specialized Unit, The National Museum of the U.S. Air Force: The museum is located at Wright-Patterson Air Force base and is the world’s largest and oldest military aviation museum, which hosts more than 350 aircraft, vehicles, and missiles on display. Note that although the National Museum of the U.S. Air Force is an additional responsibility of AFMC, it is not aligned with the focus of this paper (AFMC, 2020).

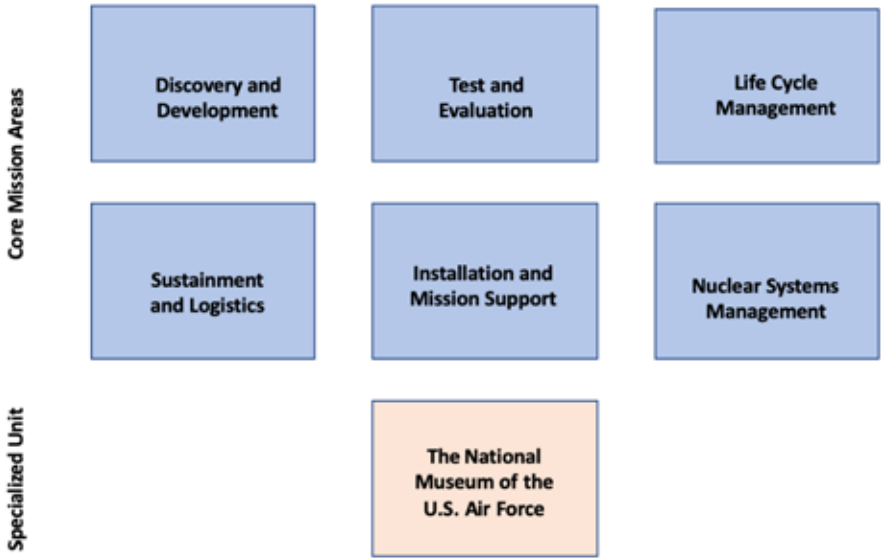


Figure 3. Core Mission Areas and Specialized Unit of AFMC

C. AIR FORCE MATERIEL COMMAND CONTRACTING RESPONSIBILITIES AND ORGANIZATIONAL STRUCTURE

AFMC’s purchasing function is fulfilled by its Contracting (PK) branch. AFMC/PK orients its mission, vision, and priorities based on Air Force contracting (SAF/AQC) and AFMC policy. AFMC/PK is a unique organization due to its two separate chains of command: command authority and contractual authority. The command authority of AFMC grants AFMC/PK the “authority to use available resources to plan, organize, direct, coordinate, and control military forces to accomplish the mission” of the organization (S. Manuel, email to author, July 7, 2020). The command authority of AFMC does not include the authority to implement or create acquisition policy or procedures for AFMC/PK (see Figure 4).

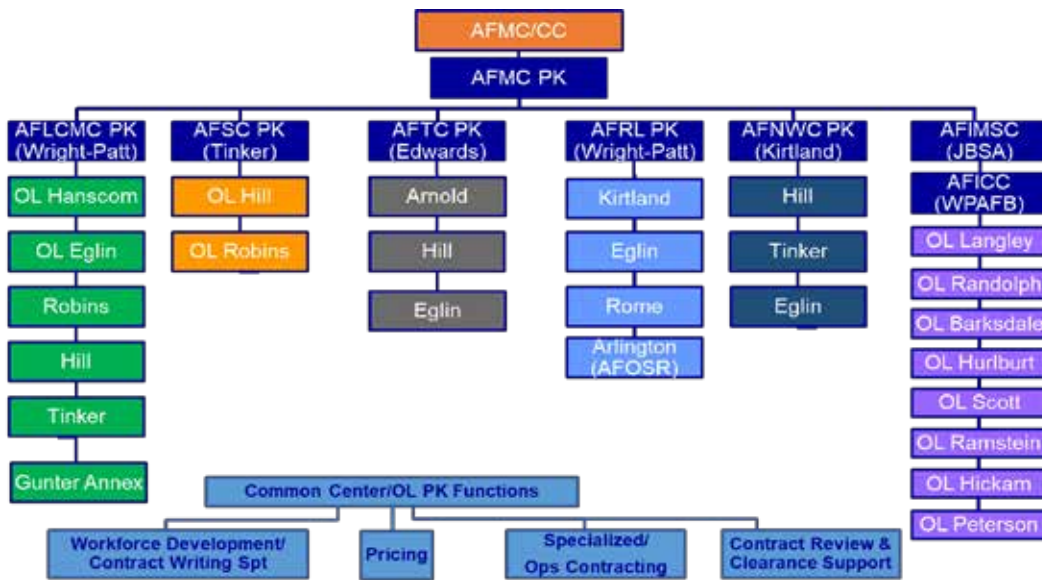


Figure 4. AFMC/PK Command Authority. Source: AFMC/PK (2020).

The contractual authority of legally being able to enter into contracts that bind and obligate U.S. government funds is delegated from SAF/AQC (see Figure 5). This seemingly subtle distinction of authorities prevents undue command influence on contracting officers performing their duties; the separation of authorities allows officers to keep a distinguishable line between the priorities of the command to which they are

assigned and the charge of obligating public funds that is in the best interest of the taxpayer and general public.

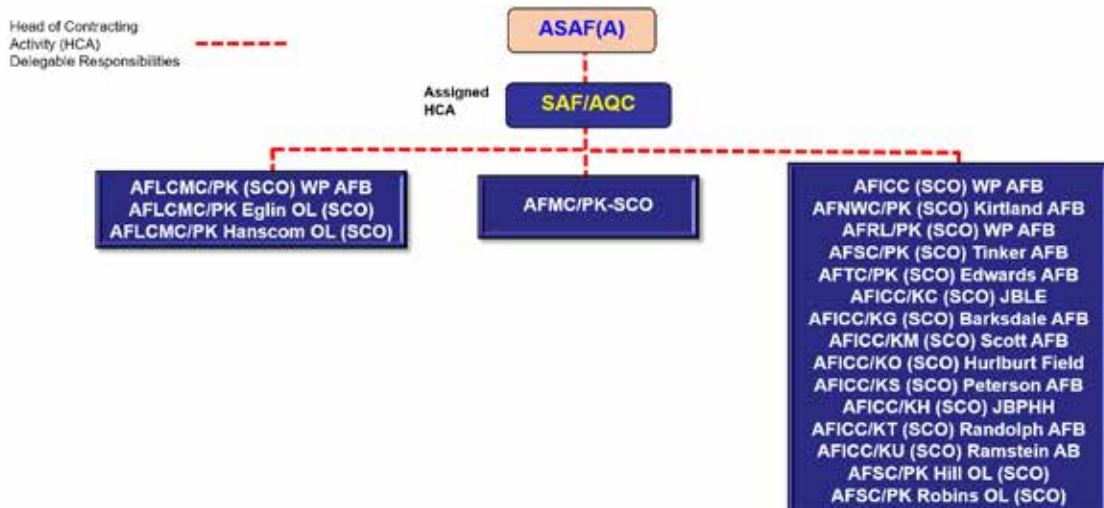


Figure 5. AFMC/PK Contractual Authority. Source: S. Manuel (email to author, July 7, 2020).

The mission statement of AFMC/PK (2020) is to “Shape AFMC’s contracting workforce, processes, operations to develop, field, and sustain war-winning expeditionary capabilities” (p. 4). The vision statement of AFMC/PK (2020) is to be “a valued partner for agile, innovative, responsive solutions” (p. 4). AFMC/PK’s (2020) responsibilities include the following:

- Organize, train, and equip the AFMC contracting workforce to develop, produce, test, and sustain war-winning expeditionary capabilities on time, on cost, and in accordance with federal acquisition requirements.
- Develop and implement an organizational vision that integrates key organizational and program goals, priorities, values, and other factors. Assess and adjust to changing situations; implement innovative solutions to make organizational improvements ranging from incremental improvements to major shifts in direction or approach, as appropriate.
- Design and implement strategies that maximize employee potential, connect the organization horizontally and vertically, and foster high ethical standards in meeting the organization’s vision, mission, and goals. Provide an inclusive workplace that fosters the development of others to their full potential; allows for full participation by all

employees; facilitates collaboration, cooperation, and teamwork; and supports constructive resolution of conflicts.

- Assess, analyze, acquire, and administer human, financial, material, and information resources in a manner that instills public trust and accomplishes the organization's mission.
- Solicit and consider feedback from internal and external stakeholders or customers. Coordinate with appropriate parties to maximize input from the widest range of appropriate stakeholders to facilitate an open exchange of opinions from diverse groups, and strengthen internal and external support. Explain, advocate, and express facts and ideas in a convincing manner, and negotiate with individuals and groups internally and externally, as appropriate. (p. 6)

D. STRATEGIC INITIATIVES

SAF/AQC has developed strategic initiatives to become a change agent for the Air Force contracting culture.

1. Tools, Not Rules

One initiative that AFMC/PK is heavily involved in is the movement toward "Tools, not Rules." This initiative is focused on providing necessary tools for contracting officers to make informed decisions, rather than formalized rules that can stifle innovation. This initiative is being spearheaded by AFMC Director of Contracting Heidi Bullock.

2. Build Mission-Focused Business Leaders

SAF/AQC is focused on attracting, developing, and retaining a talented acquisition workforce. Additionally, this initiative is focused on investing in training and workforce development.

E. GOVERNMENT CONTRACTING

Government contracting has its origins in the U.S. Constitution. Although the Constitution does not explicitly state that the government has the right to make purchases on behalf of the United States, the constitution laid the framework for future statutes and policies granting it authority (U.S. Const. art. I, § 8). As early as 1831, the U.S. Supreme Court case ruled that the United States has a "right" to enter into contracts (*United States v. Tingey*, 1831). Due to the nature of spending taxpayer dollars, government contracting

is heavily scrutinized and has policies built into its framework to allow for transparency in its spending actions. Through delegations of authority, government agencies appoint contracting officers to exercise the government's ability to enter into contracts.

F. FEDERAL ACQUISITION REGULATION

Purchasing policies and guidance for the Department of Defense (DOD), including the Air Force, is formalized within the FAR:

The Federal Acquisition Regulations System is established for the codification and publication of uniform policies and procedures for acquisition by all executive agencies. The Federal Acquisition Regulations System consists of the Federal Acquisition Regulation (FAR), which is the primary document, and agency acquisition regulations that implement or supplement the FAR. (FAR 1.101)

The Federal Acquisition Regulation is found in the Code of Federal Regulations as Title 48. Chapter 1 of Title 48, specifically, includes the FAR with subsequent chapters outlining supplementing guidance to the FAR for various agencies. The FAR is the government's procurement guidebook; however, not all government agencies follow its guidance. Furthermore, there are supplements to the FAR, which include the Defense Federal Acquisition Regulation Supplement (DFARS) as well as specific military branch supplements. This includes the Air Force's supplement to the FAR, the Air Force Federal Acquisition Regulation (AFFARS). The DFARS and AFFARS apply only to their respective organizations and can supplement information found in the FAR but cannot remove, exclude, or disregard any policy set forth in the FAR. Unique to the execution of FAR policies, warranted contracting officers are entrusted with implementing and strictly adhering to all of its policies and procedures. However, the FAR still may be interpreted differently from contracting officer to contracting officer.

G. CONTRACTING OFFICER ROLE

According to the FAR, a *contracting officer* is defined as "a person with the authority to enter into, administer, and/or terminate contracts and make related determinations and findings. The term includes certain authorized representatives of the contracting officer acting within the limits of their authority as delegated by the contracting

officer” (FAR 2.1). A contracting officer may be either a government employee, Air Force commissioned officer, or Air Force enlisted member who occupies an authorized manning position (AFFARS 5301.6, 2020). The term contracting officer should not be confused with the term *Contracting Officer*, which is an Air Force Specialty Code used to identify commissioned contracting personnel in the Air Force. Furthermore, the FAR states that a contracting officer will not enter into any contracts or bind the government in any way until they have ensured all requirements, regulations, and all other applicable procedures to their respective organization have been completed. It is also key to note that not all contracting officers possess the same levels of authority. Contingent on what authority has been delegated, Contracting Officers may only bind the government within the boundaries of the authority delegated to them in accordance with policies and their warrant. Specifically, FAR 1.602-2 states that contracting officers are responsible for completing all required actions to ensure that effective contracting is achieved, enforcing contractor compliance in accordance with contract terms and policies, and safeguarding the interests of the United States in each of its contractual agreements. The FAR also states that contracting officers “should be allowed wide latitude to exercise business judgement” (FAR 1.6). Contracting Officers specifically are required to ensure fair and impartial treatment to all contractors, be qualified by training and experience required of their job responsibilities and authority thresholds, ensure strict adherence to all contract terms and conditions, and ensure all Contracting Officer’s Representatives are properly designated in writing to include their responsibilities, delegations of authority, and limitations (FAR 1.6).

H. CONTRACT SPECIALIST ROLE

Contract specialists, although not defined in the FAR, advise and support the cognizant contracting officer responsible for making contract awards and act as the liaison between government contractors and the contracting officer. The contract specialist prepares all documents, determinations and findings, justifications, and approvals, and acts as the key individual who supports contracting officers to make awards; however, the key distinction between the contracting officer and contract specialist is that contracting specialists do not have the authority to obligate government funds. Since contract

specialists are not appointed via Standard Form (SF) 1402, Certificates of Appointment, they possess no real authority to bind the government in any way.

I. THE APPOINTING OFFICIAL

As stated in 41 U.S.C. 1702(b)(3)(G), agency heads are required to establish a system to appoint and terminate warranted contracting officers under their respective authorities (41 U.S.C. § 1702). This is reiterated in FAR 1.603-1, which states appointments as a warranted contracting officer shall adhere to the guidance set forth by the Office of Federal Procurement Policy's (OFPP) standards identified in OFPP Policy Letter No. 05-01, Developing and Managing the Acquisition Workforce, dated April 15, 2005 (FAR 1.6, 2020). The appointing official, with respect to issuing warrants, is the individual who has the authority and responsibility to set warrant limitations and delegations of authority. Within the Air Force, the Head of Contracting Activity (HCA) is the appointing official.

J. SENIOR CONTRACTING OFFICIAL

Within the DOD, the HCA is responsible for appointing and delegating authority to Senior Contracting Officials (SCOs), including the appointment of contracting officers within their chain of command. If the HCA allows additional delegation of responsibilities, SCOs may also further delegate the responsibility of appointing contracting officers to the control of regional contracting centers (RCCs). Specifically, SCOs' warrant authority includes the selection, appointment, and termination of Contracting Officer warrants of personnel who are assigned to or operating under the respective HCA (Defense Pricing and Contracting, 2015).

K. CONTRACTING WARRANT

To deem contracts legally binding and obligate government funds, a Contracting Officer must have a contracting warrant issued to them outlining the delegations of authority and all applicable dollar thresholds. To formalize the appointment of a contracting officer within the Air Force, an SF 1402, Certificate of Appointment, must be issued to the individual to formalize the delegation of purchasing authority and clearly state

all limitations and thresholds the holder of the warrant must follow (AFFARS 5301.6, 2020). Depending on the delegations of authority, the receiving individual of the warrant must comply with all policies and guidance in accordance with FAR 5301.603-2-90, Selection. Delegated warrants may require additional training, Acquisition Professional Development Program (APDP) certifications, and years of experience commensurate with their warrant's delegated authority (AFFARS 5301.6, 2020).

III. LITERATURE REVIEW

This chapter provides a review, in-depth description, and objective analysis of key frameworks that describe purchasing organizations. The following sections focus on both the structural and contextual factors of the purchasing organization. A combination of literature on the organizational structure of both purchasing and marketing organizations is used to feed the conceptual framework discussed in the following sections. The structural and contextual elements can be further broken down into nine characteristics that build the foundation of the purchasing organization. These nine characteristics provide dimension and varying points of view when dissecting organization structure; however, all contribute to a common understanding of what researchers mean when discussing organizational structure and theory. Each characteristic imparts a valuable piece to the puzzle; however, standardization, (de)centralization, and formalization hold the strongest cases for relevance and importance to the research around organizational theory, as described in the literature review that follows. In addition, these three dominating structural characteristics are crucial to defining the contextual factors later defined and discussed. Figure 6 shows the nine characteristics that are defined and described in this chapter.

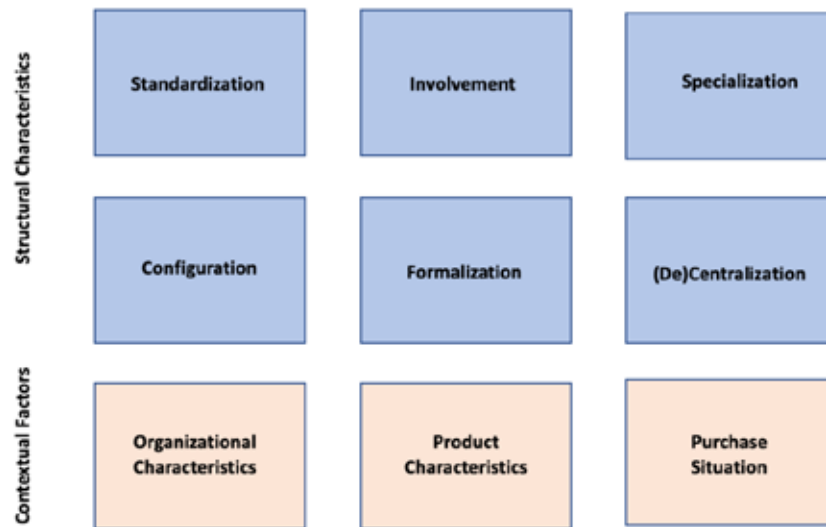


Figure 6. Purchasing Organization Structural Characteristics and Contextual Factors

A. STRUCTURAL CHARACTERISTICS

This first portion of the literature review develops the conceptual foundation for structural characteristics. Unique from contextual factors, structural components typically respond and flex to the operating environment of the organization (Glock & Hochrein, 2011). An organization will build and define its structure in unique ways depending on a number of factors, including dynamics of the operating environment, market conditions, and personnel relations, to name a few. The following sections provide a review and analysis of the structural elements of an organization: standardization, involvement, specialization, configuration, formalization, and (de)centralization.

1. Standardization

Research shows that standardization has significant effects on the performance of purchasing organizations (Glock & Hochrein, 2011). Industry professionals defines standardization of purchasing from three perspectives, focusing on standardization of processes and procedures, standardization of materials, and standardization of personnel. Research advocates that standardization in purchasing organizations allows for flexibility and streamlined decision-making, ultimately making it a significant element in competitive success (Glock & Hochrein, 2011). The degree of standardization adopted by the purchasing organization varies depending on the characteristics of the industry the business participates in and the strategic role of the purchasing organization seen by its senior leaders. Research describes standardization of purchasing from three perspectives.

First, the most widely-accepted description of standardization focuses on the processes and procedures within the organization (Garrido-Samaniego & Gutiérrez-Cillán, 2004). From this perspective, standardization materializes through the synchronization of the organization's regulations, policies, and procedures enforced by upper management as a control mechanism. The buying center or purchasing organization has a formalized organization structure and enforces the formal structure by directing flows of communication up and down command chains. Thus, standardization of purchasing procedures fosters a structure in sync with the formal organization if properly executed and maintained with an appropriate level of oversight. By standardizing common procedures

and giving managers and staff protocols for various situations, the organization guarantees the precision of its purchasing decisions as well as accuracy in solving reoccurring issues (Sánchez-Rodríguez et al., 2006). By providing automated solutions to routine tasks, managers empower staff members to focus creativity and effort on non-routine, pressing issues, increasing the effectiveness of the purchasing organization.

The second lens through which standardization often appears in application is the standardization of materials being purchased (Sánchez-Rodríguez et al., 2006). In practice, standardization of materials looks to reduce the selections of materials from several sources to one single element. Hillier (2002) took that idea one step further into consolidating multiple parts into a single component. In industry, standardization in this sense plays a key role in cost-savings efforts, as it reduces the risk and vulnerability of the purchase from being subject to multiple costs from multiple external parties to just one. This view of standardization provides a tangible metric for assessing the performance of the purchasing organization and, as Sánchez-Rodríguez et al. (2006) noted, indirectly, the organization as a whole. This view of standardization exceedingly grows in significance as the scale of a firm's purchasing strategy reaches the global scale (Trent & Monczka, 2002).

In addition to standardizing the processes and materials, a third dimension to standardization formalizes in standardizing its staff and purchasing positions. This interpretation looks to the standardized way a company or organization aligns its purchasing staff (Quintens et al., 2006). Trent and Monczka (2002) stressed the importance of the cross-functional teams that align under a manager or executive who guides the purchasing process. In practice, standardizing the alignment of teams under a focal point that provides the overarching guidance and vector proves to be successful in purchasing performance, particularly as the organization expands to a global scale.

Additional research on standardization points to its role under the lens of contingency theory (Ruekert et al., 1985). Contingency theory describes the structure of the purchasing organization as a result of the uncertainties in the market. Under this theory, which provides a hybrid of traditional organizational theory and transaction cost economics, standardization materializes in the decision to keep activities internal to the organization or seek external solutions. In this sense, standardization becomes a decision

of balancing the advantages of maintaining control and competency of core features of the organization with the benefits of outsourcing these activities, the answer to which depends on the operating environment and market. Ruekert et al. (1985) pointed out that the answer also relies on the complexity and characteristics of the task in question. As the unique characteristics of the product or task increase in complexity, the greater the benefit of keeping the product internal as to reduce the risk of creating a dependence on external markets.

For all three expositions of standardization, the research shows that its role has significant implications for managers in considering the structure of the purchasing organization, particularly in vying for that competitive edge. As Garrido-Samaniego and Gutiérrez-Cillán (2004) set out to assess the various components that characterize the purchasing situation, they ultimately found that the standardization of procedures and organizational activities had an indirect positive relationship with the organization's performance. The routinization of personnel, materials, and procedures closes the gap between risk and uncertainty as standardization inherently decreases variability (Glock & Hochrein, 2011). These relationships provide invaluable applications to industries looking to gain a competitive advantage in a constantly evolving and dynamic market (Quintens et al., 2006).

Although the research regarding standardization is overwhelmingly positive, it also points out the negative impacts of standardization. Trautmann et al. (2009) pointed out that risk standardization takes in uncertain environments. This view stems from information processing theory, which argues that in situations coated in uncertainty, managers draw on and consolidate the information out in the market to eliminate that uncertainty. Specifically, as organizations grow both vertically and globally, organizations have to be more flexible to adapt to complex markets and supply chains, thus calling for an increased flexibility within the purchasing organization (Whitley, 1994). Standardization has its place in routine purchases that do not require flexibility and innovation; however, in an operating environment that requires a high degree of flexibility as it increases in risk and uncertainty, standardization presents a barrier to efficient and effective purchasing. This is due to standardization's potential to impact an organization's ability to process information

under circumstances that require a high level of information processing (Glock & Hochrein, 2011). For this reason, standardization is not suitable for every purchasing situation.

2. Involvement

The research regarding the structural characteristic of involvement divides itself into three interrelated categories: vertical involvement, lateral involvement, and size and extensity (Glock & Hochrein, 2011). When referring to involvement, researchers define this characteristic as the interactions and degrees of communication that take place among the members of the purchasing organization, in addition to relationships with external organizations (Johnston & Bonoma, 1981). Although different lenses apply to the interpretation and application of involvement, this characteristic embeds itself in communication networks, authority structures, and the process of dealing with uncertainties or risks in the purchasing decision (McCabe, 1987). In more recent studies, researchers referred to similar concepts in organizational structure as participation, but defined the term in the same context of involvement. A common second-order effect of involvement in all three contexts reveals a predictor of influence one individual or position has on the purchasing organization (Osmonbekov & Johnston, 2018). Despite the research being divided in how the idea of involvement is labeled, this characteristic, and a leader's adoption of it, clearly shows a strong correlation to high performance in competitive markets.

Vertical involvement directly relates to the layers of bureaucracies and managers seen necessary by senior leaders and the role of communication and visibility cultured in the organization. Johnston and Bonoma (1981) defined *vertical involvement* as “the number of levels of the organization's authority hierarchy exerting influence and communicating within the buying center” (p. 146). These levels of authorities start with the top-level management and ownership and continue to the lowest operating level of employees, with the emphasis on vertical involvement centered on authority. As the purchasing situation increases in complexity and importance, the more organizations rely on involvement in the purchasing organization. Increases in complexity also increase the

need for communication in order to fully understand the intricacies of the problem facing the organization. Johnston and Bonoma (1981) also found that organizations relied on involvement more in the purchasing of equipment than services, which is rationally expected. Modern research on vertical involvement shows that the integration of technology most likely decreases the size of purchasing organizations, thus increasing the individual weight of the remaining hierarchies. Osmonbekov and Johnston (2018) argued that as the size of the purchasing organization decreases, involvement increases as responsibility and visibility of the personnel increases, as does the member's personal stake in the decision-making process; however, there is a decreased dependence on authorities with the increased reliance on information technology. Although vertical involvement historically has proven to be effective, it becomes less relevant as technology increases and companies desire to be more efficient and streamlined.

When dissecting vertical involvement in modern times where technology decreases the need for layers on layers of management, contingency theorists view vertical involvement as a solution for uncertainties in the operating environment (McCabe, 1987). McCabe (1987) found that when a company operates in an uncertain environment or market, the ability to predict and prescribe tasks becomes less feasible. Originally, McCabe (1987) predicted that companies rely less on formal positions that are useful in predictable environments. Instead, McCabe (1987) found that companies rely more on established communication networks that are reinforced through vertical involvement. This method can be found in contingency theory research done by Lawrence and Lorsch in 1967. Lawrence and Lorsch (1967) suggested the level of involvement that a company requires in the purchasing decision depends significantly on the environment in which it operates. On the contrary, McCabe (1987) pointed to evidence that employees perceived lower levels of vertical involvement with higher uncertainty decisions, as upper-level management was trusted to make the best, informed decision. This discrepancy with previous research is rooted in the employee's definition of involvement, and McCabe (1987) suggested that as uncertainty in regard to the purchasing situation increases, employees depend on the communication networks reinforced through the vertical involvement and less on the various authorities involved. This finding is further confirmed through research on the

purchasing organizations in public institutions that dealt with relatively predictable buying environments and relied less on the vertical management structure and pushed authorities down to lower management levels (Schiele, 2005).

As vertical involvement looks up and down the authority structure, lateral involvement refers to the number of departments and cross-functional areas involved in the purchasing process (Glock & Hochrein, 2011). This factor varies depending on risk and complexity of the purchasing situation. As the purchase situation increases in complexity, the need for communication and information-sharing among various subject matter experts increases to fully grasp the issue and develop the best way forward. McQuiston (1989) pointed out that the number of departments involved being dependent on the complexity of the purchase suggests lateral involvement is more fluid than vertical involvement. This suggests that lateral involvement structure depends on the organic communication networks developed through stakeholder information sharing. Osmonbekov and Johnston (2018) looked at lateral involvement through the lens of technology as well, suggesting that the incorporation of technology into the purchasing decision will significantly scale down the size of lateral involvement required to make a decision. Garrido-Samaniego and Gutiérrez-Cillán (2004) related lateral involvement to decentralized decision-making by pointing out that as a company further decentralizes its decision-making authorities, there is a greater need for lateral involvement, which, in turn, increases the influence or authority of those cross-functional departments.

The research in regard to lateral involvement overwhelmingly suggests that organizations depend on lateral involvement as risk and uncertainty of the purchasing decision increases (Mattson, 1988). Another important determinant of a purchasing organization's lateral involvement and size relies on the size of the greater organization. In 1987, Lynn found that large companies leaned on joint decision-making for purchasing decisions as a form of lateral involvement. This reliance came from both a luxury of time and resources available to which small companies did not necessarily have the same access. In contrast, small companies kept purchasing to autonomous individuals. Lynn (1987) also pointed out that autonomous decision-making in smaller firms came to be from less specialization and less authority delegation found in larger companies.

The third facet of involvement manifests in the size of the purchasing organization. Although this variable appears similar to lateral involvement, this area of research specifically refers to the number of people involved, while ignoring their respective functionality (Glock & Hochrein, 2011). Johnston and Bonoma (1981) concluded through empirical research that higher quality decision-making directly relates to an increase in the size of the purchasing organization. More people involved in the decision-making process decreased the vulnerability of risk and uncertainty. The research on the size and extensivity of involvement suggests that the more individuals involved in the purchasing decision significantly dilutes an individual's role and influence on the final decision (Glock & Hochrein, 2011); however, McCabe (1987) pointed out that although influence diminishes in certain purchasing organizations, there is contrary evidence that shows that some purchasing organizations maintain a small decision-making unit to maintain authority regardless of the number of individuals involved in the information sharing.

As involvement directly relates to the transparency between all the managerial ranks and effectiveness of the communication networks in an organization, its emphasis and adoption is crucial to streamlining operations and providing fast, informed decisions. Its importance is clear; however, the research defines the concept of involvement under different terms, thus slightly undermining its significance in comparison to the other structural characteristics.

3. Specialization

The structural variable of specialization looks at the labor division within an organization. The degree to which this structural characteristic is implemented indirectly determines the formal structure of the purchasing organization (Garrido-Samaniego & Gutiérrez-Cillán, 2004). In addition, specialization can be tailored and adapted to meet specific needs in environment complexity, uncertain and dynamic task environments, and increased dependency on adaptability (Ruekert et al., 1985). Specialization in the purchasing function can be oriented by one of two types: function or object (Glock & Hochrein, 2011).

Specialization by function divides an organization by specific jobs that are easy and repeatable (Glock & Hochrein, 2011). Germain and Droge (1998) studied specialization in this regard, looking at organizations that divided tasks into design, market research, and scheduling. Taking the idea one step further, Germain and Droge (1998) analyzed the utilization of specialization by companies that utilized strategic sourcing versus those that practiced a less streamlined, traditional buying strategy. Germain and Droge (1998) ultimately found that firms that adopted strategic sourcing practices in their purchasing function utilized specialization significantly more than firms that used traditional purchasing practices, revealing that specialization allows for more efficient and cost-saving purchasing practices. In turn, specialization aligned by object can be described as employees specializing in a variety of tasks that are interrelated.

Research proves that both views of specialization are effective ways in which to decrease uncertainty and improve effectiveness for purchasing organizations (Glock & Hochrein, 2011). In addition, both interpretations of specialization rely heavily on fully functional channels of communication connecting the various divisions, so the degree of specialization is only as effective as the communication networks set up by the organization (Lau et al., 1999).

Spekman and Stern (1979) examined organizational buying behavior of purchasing organizations operating in environments varying in uncertainty. They found that the degree of specialization, or division of labor, embraced by a purchasing organization depends on the degree of environmental uncertainty the purchasing organization faces. High levels of environmental uncertainty require purchasing organizations to be more flexible in structure in order to adapt and respond swiftly and promptly. Specialization assists in reducing risk, as it allows those with subject matter expertise to communicate the needed information swiftly and promptly. Although a division of labor suggests rigidity, the research overwhelmingly shows that purchasing organizations dealing with complex products rely on the division of labor and the communication networks intertwining these sub-divisions.

Drawing from both a system-structural perspective and a transaction cost analysis perspective of organizational structure, Ruekert et al. (1985) further confirmed Spekman and Stern's (1979) argument by looking at the relationship between specialization and a

firm's adaptability. By specializing, the purchasers fully understand the product or function that allows them to respond with clarity to complex problems or changing conditions affecting their area of expertise. In addition, these specialists can further develop their subject matter expertise and adapt their product or function into new ways of operating. In regard to environmental uncertainty, Ruekert et al. (1985) claimed that specialization can thrive in uncertain environments, further confirming Spekman and Stern's (1979) previous research. The purchasing organization's best defense against product complexity and environmental uncertainty is to draw on specialization to formulate the most appropriate response (Spekman & Stern, 1979).

4. Configuration

Another structural characteristic of purchasing organizations is configuration. Based on the comprehensive literature review of purchasing organization and design, researchers summarize the structural characteristic of configuration as "the design of the authority structure of the organization and includes dimensions such as vertical and lateral spans of control, criteria for segmentation, and numbers of positions in various segments" (Glock & Hochrein, 2011, p. 156). It should also be noted that Glock and Hochrein (2011) defined a high level of configuration, based on their many findings from research on configuration, as a purchasing organization that "implements a high number of different design elements, such as positions, departments, formal communication channels or control structures, and that may thus better match the requirements of the purchase situations" (Glock & Hochrein, 2011, p. 156).

Every organization has a formalized authority structure implemented within the company, and this structure directly dictates and influences the manner in which individuals interact with each other both vertically and laterally. The organization configuration lends itself to direct and establish the authorities of senior executives as well as the responsibilities of the organizational members directly below the senior executives. In additional supporting research, Hall et al. (1967) stated that formal configuration is based on both lateral and vertical spans of control; however, they used the term structural complexity as a synonym for configuration. Hall et al. further stated that the configuration,

or structural complexity, is influenced by the organizational relationships and the number of distinctive departments within the organization. Hall et al. (1967) identified the indicators that influence the structural complexity as the divisions of labor, hierarchical differentiation, and the spatial dispersion of the organization. Areas to consider when applying these three indicators are the number of separate and distinct organizational goals, the number of major divisions (horizontal differentiation), the number of vertical levels within the most complex division, and the distance between organizational members both physically and organizationally. They concluded that as the number of hierarchical levels increases, so does the size of the organization (Hall et al., 1967). Germain and Droge (1998) defined configuration similarly. The two variables Germain and Droge (1998) use to describe configuration of purchasing organizations are the number of layers, or “height,” of the purchasing organization and the span of control, or “width,” of the senior purchasing executive. Within their research, Germain and Droge (1998) hypothesized that just-in-time purchasing impacts the configuration of the purchasing organization; however, they conclude that there is no significant difference, or requirement, that configuration changes as just-in-time purchasing increases. The researchers concluded that the efficiency gains are not due to a reconfiguration of the purchasing organization, mainly due to the height and span of control width remaining unchanged when adopting a purchasing strategy that involves very close involvement between the buyers and sellers of products (Germain & Dröge, 1998).

As a further matter, Wood’s (2005) research on configuration concludes that both the degree of formalization and centralization serve as indicators of the type of configuration a purchasing organization adopts. The configuration type in a sense leads to certain assumptions of the interactions between the organization and outside stakeholders. By identifying what type of configuration an organization operates under, the organization can optimize where resources are utilized. Specifically, Wood (2005) stated that an organization may be classified as one of four types of configurations based on the centralization and formalization:

- Machine bureaucracy is very formalized and maintains a centralized decision-making center.

- Entrepreneurial has less formalization due to the centralized nature of the firm granting the senior executives' total authority.
- Professional has complex processes, requires formalization of procedures and rules, and has a less centralized authority structure.
- Adhocracy has a decentralized authority structure and is less formalized.

According to Pugh et al. (1963), an artifact of configuration is an organizational chart. Organizations break into various segments, departments, and activities. The respective superiors of these individualized segments on organizational charts are illustrated through lines coordinating authorities of who operates over whom. For example, the top of an organization chart will be the chief executive responsible for the organization. As a topic for future research, Pugh et al. (1963) suggested that configuration is a dimension of organizational structure. In their conclusion, Pugh et al. (1963) stated that the “shape” of the role structure, which is clearly communicated through the visual of an organizational chart, is in fact an organization’s configuration. Configuration information may be found in a completely comprehensive organizational chart that outlines and places every role within an organization in its unique place. When assessing companies during their research, Pugh et al. (1963) continued to use the lateral and vertical spans of control as a way to assess the organizations. By measuring how many job positions fell between the chief executive and the employees working directly on organizational output, they could calculate the “height” of the organization. Pugh et al. (1963) also assessed the lateral “width” of the organization by calculating the ratio of subordinates to first-line supervisors as well as the percentage of the whole organization that was direct-output employees.

Johnson et al.’s (2006) research over the 16 years between 1987 and 2003 showed a significant increase in the amount of responsibility chief purchasing officers have, as well as increased levels of where these individuals report to within an organization. This observation leads to a conclusion that chief purchasing officers have increased their level of status and influence within organizations since 1987. With the chief purchasing officers reporting more frequently to top executive positions within firms, organizational effectiveness increases. Furthermore, based on the same research, the average chief

purchasing officer's tenure in their present position decreases by approximately two years in experience from 6.1 years in 1987 to 4 years in 2003. This has implications on the supply and purchasing functions of organizations. By having a shorter background in their respective roles and less tenure, chief purchasing officer performance may be limited, and their effectiveness at developing organizational strategies may also be reduced (Johnson et al., 2006). Previous research conducted by Johnson et al. (2003) found that the average number of years the chief purchasing officer (CPO) held their present position was 8.5 years in public firms and 7.2 years in private firms. Of the public sector CPOs, Johnson et al. (2003) found that 40% of CPOs report to the finance director, while only 14% of CPOs did the same in the private sector. The authors attributed this difference to the higher emphasis on cost and budget control within the public firms as opposed to private firms, which reported to various individuals. The private sector firms reported to operations departments nearly one quarter of the time. Assuming the presence of responsibility similarities between city/county managers and CEO, executive vice president, and senior vice president positions, public sector CPOs and private sector CPOs report to these positions in 27% and 32% of the firms, respectively (Johnson et al., 2003). The research helps to describe the differences between public and private entities, but the limitations of the researchers' conclusions prime the ground for additional research regarding configuration. Meanwhile, McCue and Pitzer (2000) noted that while organizations become more decentralized in their purchasing organizations, the organizations' mid-level management positions become redundant, which potentially leads to a flatter organization. This, henceforth, will elevate the level, as well as visibility and impact, of purchasing functions within organizations (McCue & Pitzer, 2000).

When considering the influence of structural characteristics on a purchasing organization, the size of an organization significantly impacts the overall configuration design of the organization. Germain and Droge (1998) suggested that larger firms tend to have a wider span of control and an increased number of layers. Pugh et al. (1963) suggested that with an increase in the two aspects of size—the number of employees and total net assets of an organization—an associated level of bureaucratization comes with it; however, counter to Pugh et al.'s (1963) suggestions, Hall et al. (1967) stated that the size

of an organization is not in itself a “critical” characteristic of organizations. What Hall et al. (1967) continued to argue is that complexity is a much more important characteristic of a purchasing organization and may influence the level of bureaucratization more heavily than the size of the organization.

Additional research shows that a high-level procurement officer is critical to the organizational design’s effectiveness. In support of having a high-level procurement officer within an organization, further research shows that structuring the position so the higher-level procurement officer has direct access to senior level executives also increases effectiveness. These senior leader positions include the chief executive officer, board of directors, or equivalent. By having a very high position within a company’s organizational structure, that individual will have higher visibility and additional resources associated with the position that can be leveraged, particularly with medium-to-large-size firms. Purchasing executives who have similar levels of authority and equal responsibilities as other executives are key to an effective organizational design. This is even more important if an organization wishes the higher-level procurement officer to effectively contribute to the goals and strategies of a firm (Trent, 2004).

5. Formalization

Formalization is another component of the six structural characteristics that describe purchasing organizations. Glock and Hochrein (2011) summarized their literature review findings of formalization as being the extent to which an organization relies on rules, procedures, and policies to control and direct the actions of an organization’s members. High levels of formalization have historically been a method to minimize variability and control purchasing situations to the maximum extent possible and to standardize the work performed by an organization’s employees (Glock & Hochrein, 2011). The level of formalization of an organization, as described in “A Conceptual Scheme for Organizational Analysis,” is informed by the extent communications and procedures are documented. Pugh et al. (1963) further specify that formalization includes “(1) statements of procedures, rules, roles (including contracts, agreements and so on), and (2) operations of procedures, which deal with (a) decision seeking (applications for capital,

employment, and so on), (b) conveying of decisions and instructions (plans, minutes, requisitions, and so on), and (c) conveying of information, including feedback” (p. 303). The definition of formalization was again stated in the work of Pugh et al. (1968) as the “extent to which rules, procedures, instructions, and communications are written” (p. 75). Researchers have measured formalization by assessing whether or not a procedure of a purchasing organization was written, and if so, how it was written and whether the procedure was filed, and if so, how it was filed, and why a procedure was formalized, including whether there was a legal requirement of it being documented or not (Pugh et al., 1963).

Similarly, research performed by Hall et al. (1967) in their article “Organizational Size, Complexity, and Formalization,” reiterates that characteristics of a formalized organization are determined based on the proportion of rigidly defined jobs and the flexibility and allowed variability in respect to rules that define those jobs. The measured characteristics they used in their research included the following:

- Roles. The degree to which the positions in the organization are concretely defined. The presence or absence of written job descriptions.
- Authority Relations. The degree to which the authority structure is formalized (clear definition of the hierarchy of authority). The extent to which the authority structure is formalized in writing.
- Communications. The degree of emphasis on written communications. The degree of emphasis on going through established channels in the communications process.
- Norms and Sanctions. The number of written rules and policies. The degree to which penalties for rule violation are clearly stipulated. The extent to which penalties for rule violation are codified in writing.
- Procedures. The degree of formalization of orientation programs for new members (systematic socialization for all new entrants). The degree of

formalization of in-service training programs for new members (systematic and continuing socialization of new members; Hall et al., 1967).

Hall et al. (1967) concluded that organizations with a higher level of organizational formalization leads that same organization to have more control over individuals within the organization by limiting how much discretion and freedom they have within the organization.

Hall's research concluded, based on interviews with 75 organizations ranging in size from six employees to more than 9,000 employees, that there is only a slight tendency for larger organizations to be more formalized than small organizations; however, their findings were inconsistent, and only smaller relationships could be found, if any, with other organizations (Hall et al., 1967).

One reported benefit of highly formalized organizations is that performance can then be assessed more objectively. Without formalizing an organization's goals and the organization's strategy for meeting these goals, there would be no benchmark controls to conclude whether or not the organization is performing to its desired standard. Furthermore, Germain and Droge (1987) countered the argument that a more formalized organization will prevent quick actions and stifle initiatives internally. Rather, they argue that strategic formalization helps coordinate employees toward a singular vision of the organization and empowers employees to work toward the shared vision. The strategic vision being formalized is different in respect to the previous definitions of formalization but is another indicator of how formalized an organization is (Germain & Droge, 1998). Germain and Droge's (1998) argument is countered by the research performed by Lau et al. (1999). Lau et al. (1999) found that purchases that are unfamiliar, involve new technology, and are novel in nature benefit from a less formalized purchasing structure. Novel purchases require the purchasing team to become more flexible, adaptable, and innovative to purchase the required items or services effectively. By having management relax formal policies and procedures, the purchasing team will be able to operate in the environment free from bureaucratic rules that may not apply to the novel-type purchases. Furthermore, the buying team will also be able to take advantage of informal routes of

communication, which may ordinarily be prohibited due to the strict policies and procedures. Hence, fewer rules, procedures, and instructions and an overall low level of formalization may be beneficial to the purchasing organization (Lau et al., 1999).

Additional research has applied contingency theory to formalization and whether high or low levels of formalization are best for an organization. Under contingency theory, defined as a hybrid of transactional cost economics and traditional organizational theory by Ruckert et al. (1985), the formalization of an organization should be contingent upon the type of task being performed, the way in which actions to be accomplished are organized, and the environment in which the task is being accomplished (Ruckert et al., 1985). The authors continued to state that formalization, dependent on whether internal organization structures or external organization structures exist, is either increased through the advancement and enforcement of rules or the creation of legal contracts that control the behavior of suppliers and other external parties, respectively. Ruckert et al. (1985) stated that when tasks are short and repetitive, performance can be assessed easily and accurately, and when the environment is stable and static, an organization will benefit from having greater formalization. If these tasks and environment circumstances differ, then a lower degree of formalization will be more efficient.

6. Decentralization and Centralization

Centralization or decentralization, as documented by Glock and Hochrein (2011), are the structural variables that have been most used when researching the purchasing organization. Note the term *(de)centralization* will be used interchangeably when referring to decentralization and centralization in this paper. McCue and Pitzer (2000) stated in their article, “Centralized vs. Decentralized Purchasing: Current Trends in Governmental Procurement Practices,” that centralized purchasing structures are utilized when an organization places all purchasing responsibility in one central location for an organization. A centralized and decentralized (or hybrid) structure is used when purchasing occurs at both headquarter locations and at major divisions or subunits. Lastly, a decentralized purchasing structure is used when all purchasing is exclusively handled at the sub-unit or major divisions level (McCue & Pitzer, 2000). These underlying definitions are found in

many articles and are used as a reference moving forward. In “A Conceptual Scheme for Organizational Analysis,” Pugh et al. (1963) stated that there are two types of authority recognized within literature and research. First, there exists formal or institutional authority, which is derived from a specific position or delegation of authority. Second, real or personal authority stems from an individual or individuals who have the knowledge and consummate experience that warrants the individual to have authority. The difference between formal authority and real authority, respectively, impacts the centralization or decentralization of an organization. Pugh et al. (1963) provided the following key factors regarding centralization: “(1) the location of the actual decision-making function at particular points in the authority structure, (2) the promulgation of rules for decisions, which limit the discretion of subordinates, (3) the frequency and thoroughness of review procedures and control systems ... and (4) the legitimate availability of relevant information” (p. 304). Furthermore, the authority and the accountability of the senior executive may also be observed. Things to consider when defining the centralization of an organization are the limits of the senior executive’s power and discretion in respect to the control of resources (human capital, money, time, etc.) and the control of activities being performed by the organization (workflow, problem identification, etc.). Another measure of centralization within an organization is how quickly authority is lost for each step taken away from the senior executive’s position (Pugh et al., 1963). Pugh et al. (1968) made another consideration in the article, “Dimensions of Organization Structure,” that added additional context to the definition of centralization. The authors stated that centralization is directly related to the locus of authority. This locus of authority can be identified by answering the question of which level, or position, grants authority to take a formal action. By identifying where this final decision of authority is made, the locus of control can be determined, and, subsequently, the level of authority can be used to assess whether the organization is centralized, decentralized, or has a hybrid structure (Pugh et al., 1968). The authors used a six-tier framework to assist in placing and assessing organizations and where their respective locus of control resides. The six-tier framework was indicated by a score of 0, 1, 2, 3, 4, or 5, and had a corresponding locus of authority identified as supervisory, workflow subunit, all workflow activities, whole organization, and above chief executive,

respectively. Another indicator of centralization identified by the authors includes the extent to which members of the organization were required to seek approval and decision authority from their respective headquarters, if applicable. This was not a factor for private organizations that had complete control over their entire organization but was more applicable to government and other larger organizations (Pugh et al., 1968).

When considering whether to centralize or decentralize a purchasing organization, researchers point to a variety of factors to consider, as listed next. McCue and Pitzer (2000) highlighted that the “traditional paradigm of public purchasing authority and operations were a fundamental principle in order to assure economy, efficiency and integrity in the expenditure of public resources” (p. 400). By having a centralized purchasing structure, McCue stated that the limiting of direct authority and power of subordinate departments ensures professionalism and accountability. In order to have a decentralized purchasing structure, the administrative responsibility, authority, and discretion to make decisions is delegated to the lower levels of the organization’s hierarchy, or configuration. The formalization of rules and procedures must then be sufficiently enforced by the proper delegations at the appropriate levels. With that said, it is the lower managerial level individuals’ responsibility to develop solutions and execute purchasing at their discretion. As documented by McCue and Pitzer (2000), the centralized decision-making authority had the top-level purchasing policy flow downward to the purchasing agency, which then branched out to each subunit. Decentralized decision-making authority was described as having purchasing policy flow down to each subunit directly, with each subunit connected to each other. Lastly, the hybrid structure resembled the centralized decision-making authority structure with the added benefit of having subunits communicating with each other (McCue & Pitzer, 2000). See Figures 7–9 for visual representations of McCue and Pitzer’s (2000) findings.

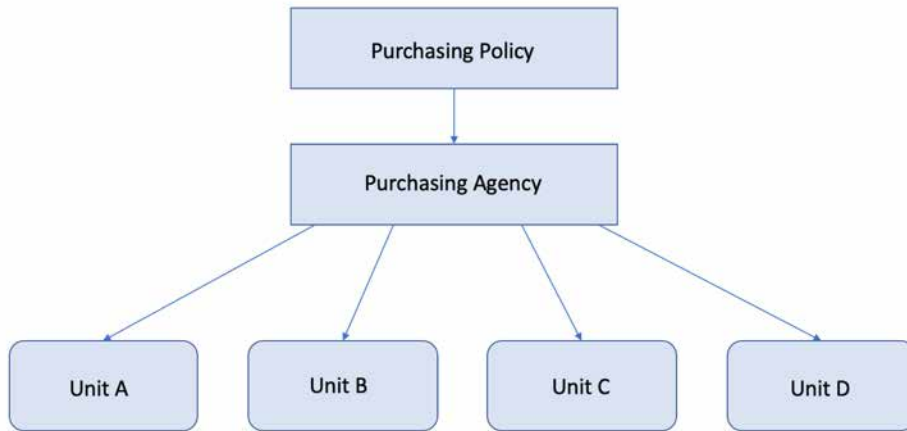


Figure 7. Decision-Making Authority in a Centralized Public Purchasing.
Source: McCue and Pitzer (2000).

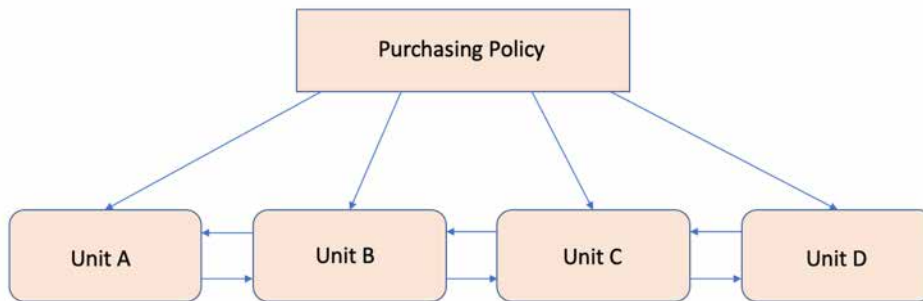


Figure 8. Decision-Making Authority in a Decentralized Public Purchasing.
Source: McCue and Pitzer (2000).

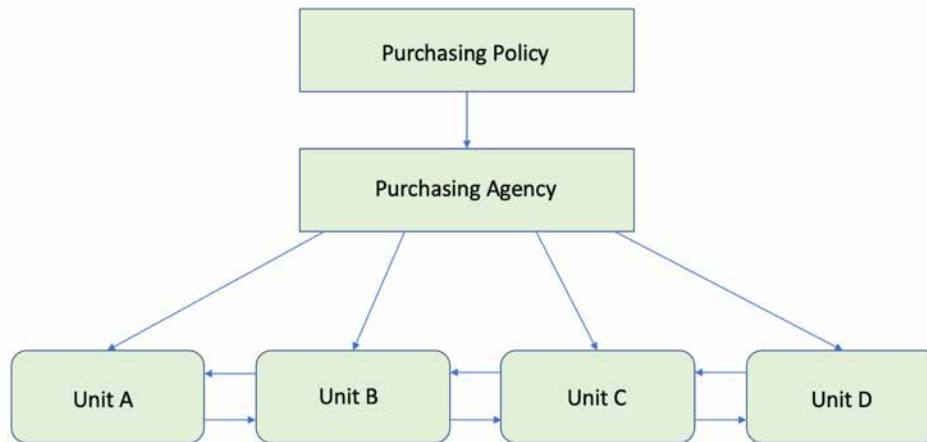


Figure 9. Decision-Making Authority in a Centralized/Decentralized (Hybrid) Public Purchasing. Source: McCue and Pitzer (2000).

The factors that were highlighted in the *Harvard Business Review* article, “Should Companies Centralize Procurement?” (Corey, 1978) include the ability to standardize, the common use of an item, whether items will be needed for long-term or short-term, the need for bargaining power in respect to negotiations, the need for specialized purchasing skills and knowledge, the uniqueness of requirements, and the predictability or unpredictability of requirement quantities. These identified factors help explain when a centralized or decentralized purchasing function will operate most efficiently. Corey (1978) noted that few factors that affect *how* purchases are being made lead to an increased need for more centralization. These factors include but are not limited to the increased use of complex computer-based management systems, a threat of supply shortages and interruptions, an increased responsibility and scope of supply needs and opportunities, and a concern of competition among private and governmental entities. Due to these changes circa 1978, the author concluded that centralization would play a larger role in purchasing organizations in the future; however, he also acknowledged that purchasing organizations will have various needs and requirements, and a centralized structure is not a one-size-fits-all solution (Corey, 1978).

This point is further supported by Ruekert et al.’s (1985) research, which states that a high level of centralization, both internal and external to the organization, can lead to better coordination and control of activities associated with tasks. The increased amount of

coordination and control will lead to more effective performance within the organizations. Using contingency theory as a framework, however, they highlighted that not all environments or tasks will lead to an increase in effective performance. Organizations with a high level of centralization are more effective only when the individual(s) located at the central locus of control have a firm understanding of the tasks at hand. This leads Ruekert et al. (1985) to conclude that centralized organizations increase decision-making time and may risk placing the decision authority in individuals who are removed from the dynamic tasks and environment, which will reduce performance. Decentralized firms, in turn, are more effective and better suited for organizations when tasks and the environment are likely to change (Ruekert et al., 1985).

A point of concern, and hesitation by some researchers, is that while decentralization has benefits depending on the purchasing situation, there are drawbacks to this strategy. By sharing purchasing authority with subordinates, there may be higher risks of corruption, fraud, waste, and excessive costs within the organization (Petrucci & Peters, 2016). The concern highlighted is when an increased responsibility is delegated to employees, the risk is also increased. Decentralized organizational structures create additional opportunities and situations for fraud and mismanagement, which are related to the independent thoughts and actions of those delegated higher authorities and responsibilities. In *Preventing Fraud and Mismanagement in Government: Systems and Structures*, Petrucci and Peters (2016) stated a high level of internal controls, adequate training and staffing, formalized and documented procedures, and effective communication are required of a successful decentralization structure. Counter to the traditional paradigm of centralized purchasing authority is balancing the correct functions and authority levels so that the accountability, efficiency, and control of purchasing agents are still maintained while offering flexibility via delegations of authority to ordinarily subordinate positions. Organizations have made structural changes toward a more decentralized structure by increasing the level of responsibility and dollar thresholds over which subordinate units have total authority. By eliminating procedures and requirements to seek authority upward in the chain, decentralization of the purchasing function occurs (McCue & Pitzer, 2000).

In the 2003 article, “A Comparison of Purchasing’s Organizational Roles and Responsibilities in the Public and Private Sector,” Johnson et al. found results supplementing Corey’s 1978 research. Using research conducted by the National Institute of Governmental Purchasing (NIGP), Florida Atlantic University, and the Center for Advanced Purchasing Studies (CAPS), Johnson et al. (2006) found that public governmental organizations had centralized, decentralized, and hybrid structures in 51%, 2%, and 47% of the organizations they surveyed, respectively. The proportions for centralized, decentralized, and hybrid structures in private sector organizations were 27%, 22% and 51%, respectively (Johnson et al., 2006). Johnson et al.’s (2006) research, at times, contradicts Corey’s (1978) findings that a centralized purchasing organization will play a larger role in these types of organizations. It is important to note that the research conducted on private sector companies found approximately one quarter of firms had a centralized structure, while the majority, 51%, of firms utilized a hybrid structure; however, the majority of public sector firms do utilize a centralized purchasing organizational structure. Despite these firms having a high proportion of centralized purchasing organizations, Johnson et al. (2003) identified that the trend toward more decentralized structures improved purchase response time, eliminated bureaucratic policies and procedures, and improved coordination efforts between organizational departments. McCue and Pitzer (2000) documented that a decentralized structure may lend itself to preventing bureaucratic obstacles and will improve communication and efficiencies between departments, as well. Additionally, the authors noted that there is a similar percentage of firms that utilize the hybrid structure. The authors stated that the strengths of both centralized and decentralized structures can be utilized with a hybrid structure, and this hybrid structure leads to organizations decentralizing only the elements of purchasing that could leverage these benefits (Johnson et al., 2003). This evidence was previously mentioned by McCue and Pitzer (2000) three years earlier, when they stated that cities and counties were evolving toward a mixed, or hybrid, structure as opposed to a strictly centralized model.

B. CONTEXTUAL FACTORS

In addition to the identified structural characteristics, there also exist contextual factors, which are located outside of the purchasing organization. The contextual factors of an organization influence the structural characteristics of the purchasing organization, and a positive fit between the two is required to reach an increased level of performance. This also presents that the structure of an organization is influenced by factors, to include contextual factors, that are internal and external to the organization. Developing a strong fit between structural and contextual factors leads to efficiencies within the purchasing organization. Researchers condense contextual factors into three main categories: organizational characteristics, product characteristics, and purchase situation. Researchers utilize concepts focused on structural factors to define the organizational characteristics, electing to use common trends such as the degree of centralization, formalization, standardization, and specialization to describe the characteristics that are central to the organization and the impact to the purchasing organization (Glock & Hochrein, 2011).

1. Organizational Characteristics

The first contextual factor is the organizations characteristics of the purchasing organization. Researchers hypothesize that the organizational strategy directly influences the level of structural factors, specifically centralization and formalization, that exist within the organization's purchasing function (Gianakis & Wang, 2000; Johnston & Bonoma, 1981). Researchers argue that this is often the result of an organization's policies and regulations that are, in turn, represented within the various departments or functions (Glock & Hochrein, 2011). Similarly, Crow and Lindquist (1985) hypothesized that the size of the organization will also have a direct and associated relationship with the size of the purchasing organization. This conclusion can be drawn from evidence showing the organization might have the desire to decrease risk, therefore increasing personnel involvement in the purchasing process. Other research indicates that the level of the chief procurement officer within the organization is critical to organizational purchasing performance and efficiency (Trent, 2004). Trent (2004) argued that a higher-level chief procurement officer, particularly with direct oversight from a chief executive officer

(CEO), is essential for maintaining visibility of resources and can improve purchasing efficiency. Lastly, Gianakis and Wang (2000) presented evidence that the use of a performance measurement system within the organization increases the degree of decentralization within the purchasing organization. This supports Lynn's (1987) hypothesis that when employees are held accountable for their performance, they are more likely to attain decision-making authority.

A preponderance of research on organizational characteristics focuses on the structure of the organization. While research indicates that organizational structure directly influences buying center structure, it fails to account for other factors that may also contribute to the purchasing organization's structure. Some authors argue that the organizational strategy is a key factor in determining the structure within a purchasing organization (Glock & Hochrein, 2011). Juha and Pentti (2008) identified a variety of differing business strategies, referencing technology industries and manufacturing industries as a few examples. The researchers argue that technology firms emphasize adaptability more so than manufacturing firms, therefore increasing the levels of perceived risk the purchasing agents are willing to accept (Juha & Pentti, 2008). Additional research focuses on the differences in organizational strategy implemented within the private and public sectors. In an effort to understand the differences, Gianakis and Wang (2000) hypothesized that public-sector organizations often adopt a customer-oriented strategy and thus are more likely to decentralize purchasing decision-making. This results from the industry's desire to meet the customer's demands using a decentralized decision-making construct that allows front-line managers, who have the most information on customer needs, to decrease lead times while remaining flexible. Similarly, purchasing organizations with a focus on supplier interaction are more inclined to adopt a decentralized approach (Corey, 1978). In determining the impact of time pressure on organizational structural factors, Lau et al. (1999) argued that organizational strategy impacts the perceived time pressure, ultimately resulting in the need to decentralize decision-making in order to meet timelines. Through the lens of contingency theory, no single structure directly applies to a purchasing organization; therefore, managers should consider external and internal factors when determining organizational structure (Ruekert et al., 1985). Organizational strategy,

as a company's internal factor, directly impacts the structural factors of the purchasing organization (Mattson, 1988).

A third variable in organizational characteristics is the size of the organization, specifically the size of the purchasing function. Many researchers depict size of the organization as a structural variable; however, others argue that the size of the buying organization should be viewed under the contextual umbrella (Glock & Hochrein, 2011). Trent (2004) hypothesized that as an organization grows in size, it is more likely to provide a variety of products and services, primarily due to the access to more resources. This theory is built upon the idea that as organization's size increases, so does the likelihood that the purchasing function will be more specialized, therefore increasing employee involvement (Crow & Lindquist, 1985). Grønhaug (1975) hypothesized that organizational size correlates with joint decision-making in the purchasing process in large organizations, therefore increasing the size of the buying center. In addition, Trent (2004) argued that, in practice, purchasing organizations should consider adopting or changing various structures, such as specialization and centralization, as the size of the organization increases. This theory further expands on the contingency theory framework, ultimately suggesting that companies should consider both internal and external factors when adjusting structural factors (McCabe, 1987; Ruckert et al., 1985).

Research into the impact of organizational characteristics on the purchasing organization overwhelmingly suggests a positive relationship between oversight of these factors and company performance. Intuitively, policies and procedures within the organization as a whole should directly impact those of the purchasing function; however, researchers often acknowledge the presence of the contingency theory framework, identifying the impact of both internal and external factors on how an organization structures the purchasing function (Glock & Hochrein, 2011; Ruckert et al., 1985).

2. Product Characteristics

The first product characteristic addressed by researchers is product complexity. Researchers define complexity by the varying levels of product differentiation and technical intricacies (McCabe, 1987). The research argues that structural factors of a

purchasing organization can be influenced by the complexity of the products being purchased. Johnston and Bonoma (1981) found that with increasing levels of product complexity, a purchasing organization requires increasing levels of involvement among the various functions. As previously discussed, involvement refers to the interactions and degrees of communication that take place in the purchasing organization as well as relationships with external organizations (Johnston & Bonoma, 1981). The authors argued that as product complexity increases, so does the need for communication within the organization to share information from both internal and external sources (Johnston & Bonoma, 1981). Garrido-Samaniego and Gutiérrez-Cillán (2004) pointed to empirical evidence that supports this concept, while also adding that as product complexity increases, so does the size of the purchasing organization. This contradicts modern research on involvement that argues that a decrease in the size of the organization will yield an increase in involvement (Osmonbekov & Johnston, 2018).

The second product characteristic variable is the purchase volume, which refers to the amount of a product or service purchased. As the purchase volume increases, researchers see an increase in cost savings in addition to a decrease in risk. Corey (1978) argued that companies should centralize high-volume purchases within the enterprise in order to allow for greater cost savings based on a sufficient volume. The author also argued that centralizing the procurement of high-volume products requires specialization at the enterprise level (Corey, 1978). In contrast, Mattson (1988) found that an increase in purchase volume leads to more involvement from top-level management within the organization. Mattson (1988) further argued that top-level management is more concerned with the allocation of resources when high-volume purchases exist. This lends to the idea that a positive relationship exists between the purchase volume and the importance to the organization (Corey, 1978; Grønhaug, 1975). Grønhaug (1975) argued that higher-volume purchases have an inherent greater perceived risk, which is discussed later in this paper. Research on perceived risk indicates that as risk increases, the size of the buying center also increases, inferring that an increase in purchase volume will also increase the size of the buying organization (Grønhaug, 1975; Garrido-Samaniego & Gutiérrez-Cillán, 2004).

Research into the impact of product type on the structural factors of formalization, centralization, and specialization is largely split. A dominant amount of research into the business world classifies product types based on mission set, primarily using materials and capital equipment (Laios & Xideas, 1994). Laios and Xideas (1994) defined *materials* as “technical items that become part of the final product, parts of the service and distribution network, replacement parts for capital items, and supplies for maintenance and repairs” (p. 14). Capital equipment is described as the equipment used for production or distribution that depreciates over time (Laios & Xideas, 1994). Johnston and Bonoma (1981) focused on classifying product types by capital equipment and services, arguing that services require lower levels of involvement in the purchasing organization while also being more decentralized. Laios and Xideas (1994) ultimately concluded that the item defers in importance to its complexity, arguing that increases in complexity and importance would also increase centralization, formalization, and specialization, respectively. Their findings also indicate that the degree of the aforementioned structural factors varies based on the phase of the purchase. Trautmann et al. (2009) came to a similar conclusion in regards to importance but, however, found that an increase in importance has a negative relationship on structural factors. Rather than grouping product types, Trautmann et al. (2009) used a portfolio approach that groups products by importance, finding that various levels of importance require various degrees of structural factors. The authors indicated that organizations should consider structuring purchasing organizations in a similar manner based upon the strategic importance of the products (Trautmann et al., 2009).

It appears that the relationship between product characteristics and structural factors cannot be directly inferred or related, potentially resulting from other contextual factors that exist with purchasing organizations. A majority of research focuses on extreme circumstances of product characteristics in terms of volume, complexity, and type; however, most researchers acknowledge the existence of other factors that may have caused the respective impacts to structural factors.

3. Purchase Situation

The last contextual factor discussed is the purchase situation, which is defined by the experience that employees face during a purchase process (Glock & Hochrein, 2011). A majority of the research analyzes five variables of the purchase situation, the first being time pressure. “Time pressure is the presence of a very restrictive time window needed to exercise a purchase decision, and the extent to which buying center members feel compelled to make a decision quickly” (Lau et al., 1999, p. 579). Research indicates that when faced with high time pressure, an organization is more likely to adopt an organizational design feature that enables rapid decision-making (Lau et al., 1999). Lau et al. (1999) found a positive relationship between time pressure and buying center complexity, referring to the extent to which an organization uses specialized departments and cross-functional teaming. As discussed previously, increasing specialization decreases risk caused by purchase uncertainty. By specializing, organizations that regularly face short procurement lead-times may expedite the process by leveraging procurement expertise. Additionally, the research finds a positive relationship between high time pressure and a high degree of centralization within the purchasing organization, while also finding a decreased degree of formalization (Lau et al., 1999). This further supports the idea that by reducing formal processes and procedures, the organization decreases procurement lead times. Garrido-Samaniego and Gutiérrez-Cillán (2004) confirmed that an increase in time pressure correlated with a decrease in involvement and participation within the organization, indicating that systemically high time pressure will result in decreased buying center size and a higher degree of specialization.

The second variable within the purchase situation is the perceived risk of a purchase from the perspective of the purchasing organization members. Garrido-Samaniego and Gutiérrez-Cillán (2004) argued that as the perceived risk increases, there is a respective increase in the size of the purchasing organization. This suggests that purchasing organizations attempt to compensate for increased risk by gaining access to additional information or resources. Other researchers argue that higher levels of perceived risk can impact various structural factors of a purchasing organization. Juha and Pentti (2008) argued that a high perceived risk within a traditional manufacturing company has a positive

relationship on the degree of centralization and formalization. The researchers hypothesized that the opposite relationship exists within the technology industry, leading to more decentralized decision-making and informal approaches to purchasing. This supports the idea that strategy more strongly contributes to the decisions of the purchasing organization than the level of perceived risk does. Furthermore, their research supports the idea that both internal and external factors should be considered in order to determine the organizational structure from the lens of contingency theory (Ruekert et al., 1985).

A third variable within the purchase situation is the importance of the purchase. Researchers define *purchase importance* as the potential impact within the organization to organizational objectives, profitability, productivity or other purchases (Dawes et al., 1992). Lau et al. (1999) analyzed the relationship of purchase importance and structural factors (formalization, organizational complexity, and centralization). The researchers define *organizational complexity* as “the degree of differentiation between groups based on the orientation of members and the nature of tasks performed” (Lau et al., 1999, p. 576). Empirical results of the study point to a positive relationship between an increase in purchase importance and formalization, complexity, and centralization (Lau et al., 1999). The authors argue that the increased formalization, complexity and centralization allow for information to be readily available in order to meet organizational objectives, which is necessary as purchase importance increases. Other researchers find a positive relationship between purchase importance and the size of the organization (Dawes et al., 1992; Garrido-Samaniego & Gutiérrez-Cillán, 2004). They cite that as purchase importance increases, more employees are required to participate in the process to leverage technical expertise as a measure to decrease risk, leading to an increase in the buying center size.

A fourth variable in the purchase situation is the *buyphase*, defined as “decision process stages from problem recognition through intermediate stages, such as search for supplier and contract award, to the post purchase stage” (Mattson, 1988, p. 208). Research shows a positive relationship between the perceived level of risk and the stage during the buyphase (Juha & Pentti, 2008). The research points to evidence that as an organization progresses through the buyphase, the perceived level of risk increases, finding that perceived risk is lowest during the formative stages of the buying process and increased in

the latter stages. This correlates with an increase in formalization and centralization throughout the buying process (Dawes et al., 1992; Juha & Pentti, 2008). Ruekert et al. (1985) argued that from the lens of contingency theory, organizations should consider a flexible approach to structure based on the buyphase. The authors stated that different structural levels are required at different stages in the product life cycle, citing that organizations should adjust as appropriate (Ruekert et al., 1985). In summary, the buyphase that an organization identifies as requiring the most resources will impact the purchase situation and, therefore, could impact the structure of the purchasing organization. Organizations may choose to structure to specifically support the buyphase perceived to be the most impactful or that presents the most risk.

The final variable in the purchase situation is the *buyclass*, which is defined as three distinct categories: new task, modified rebuy, and straight rebuy (Mattson, 1988). In general, researchers accept these three buyclass categories for most research, focusing on how structural factors vary based upon the classification (Glock & Hochrein, 2011). Research indicates that purchasing organizations that focus on new tasks will tend to adopt a more complex structure than those focused on modified or straight rebuys (Crow & Lindquist, 1985; Garrido-Samaniego & Gutiérrez-Cillán, 2004; Grønhaug, 1975; Lau et al., 1999). This indicates that purchasing organizations with a new purchase portfolio are more likely to specialize purchasing functions in order to decrease risk.

The contextual factors provide valuable insight to how an organization shapes itself in response to factors internal and external of the organization. The combination of internal and external factors with the organization's response to them forms the basis of how contingency theorists view contextual factors. The array of research on organizational theory points to a number of other contextual factors; however, the three highlighted in this section prove to be consistent among all the research and are the strongest cases for explaining how an organization responds to its environment to gain a competitive edge.

C. CONCLUSION

While conducting the literature review, the context of the research was critical to understanding the key findings and implications found within the literature. At the center

of the research is the consideration of how the Air Force's contracting structure, roles, and authorities compare with the purchasing functions of the private sector organizations. Prior to conducting the literature review, the researchers had no general framework to objectively conduct a valuable analysis and comparison. However, following the previous literature review, the researchers apply the structural characteristics to both the Air Force purchasing organizations and large, private sector organizations. To a lesser extent, contextual factors are also considered.

The research has indicated that structural characteristics and contextual factors of organizations play a role and influence, or are influenced by, the organization itself. The structural characteristics of standardization, involvement, specialization, configuration, formalization, and (de)centralization all are center and most important to answering the researchers' questions posed at the beginning of this paper. Structural characteristics, specifically, define the responsibilities and authorities of a purchasing organization and also determine how tasks are distributed internally (Glock & Hochrein, 2011). For this reason, structural characteristics hold the most importance and are concluded to be the most critical considerations when analyzing a purchasing organization. Table 1 summarizes key findings, or important discoveries, with respect to the identified structural characteristic, implications for organizations, and implications specific to purchasing organizations as informed by the preceding literature review. Note that implications for organizations are general findings for all basic organizations based on the literature. Implications for purchasing organizations are specifically addressed, to include AFMC/PK.

Table 1. Literature Review Key Findings and Implications

Structural Characteristic	Key Findings	Implications for organizations	Implications for purchasing organizations
Standardization	<ol style="list-style-type: none"> 1. Standardization allows for flexibility and streamlined decision-making 2. Standardization of policies and procedures increases precision of purchasing decisions and accuracy in solving reoccurring problems 3. Standardization of materials being purchased reduces redundant selections of materials from multiple sources to one source 4. Standardizing staff and purchasing positions under a focal point (e.g., manager or executive) allows for guidance and strategy to be standardized 	<ol style="list-style-type: none"> 1. Standardization of an organization's procedures, materials, and personnel closes the gap between risk and uncertainty by decreasing variability in each aspect 2. Standardization may decrease flexibility of organizations that grow in size, especially those with a global presence 	<ol style="list-style-type: none"> 1. Standardization of an organization's purchasing procedures, materials, and personnel closes the gap between risk and uncertainty by decreasing variability in each aspect 2. Standardization levels should be carefully considered as the purchasing function of an organization grows in size
Involvement	<ol style="list-style-type: none"> 1. Increased complexity and importance within purchasing situations leads organizations to rely on involvement more heavily 2. As information technology increases, vertical and lateral involvement becomes less important 3. Higher quality decision-making directly relates to an increase in the size of the purchasing organization 	<ol style="list-style-type: none"> 1. Organizations depend on established communication networks that are reinforced via vertical involvement in uncertain environments and markets 2. Large organizations more consistently rely on lateral involvement in decision-making due to more resources, such as personnel, time, and availability 	<ol style="list-style-type: none"> 1. The purchasing organization identifies uncertainty in purchasing situations, which leads to a dependence on communication networks rooted in vertical involvement and less reliance on communication networks rooted in lateral involvement meant for predictable purchasing environments 2. High lateral involvement is more important as risk and uncertainty of the purchasing decision increases due to high lateral involvement,

Structural Characteristic	Key Findings	Implications for organizations	Implications for purchasing organizations
			<p>leading itself to increased communication across functional organizations</p> <p>3. Decreased vulnerability of risk and uncertainty is associated with larger purchasing organizations but also reduces the influence of its individuals within the organization</p>
Specialization	<p>1. Specialization of specific jobs or tasks can improve efficiency and cost savings.</p> <p>2. Organizations that use strategic sourcing were found to specialize more than those using traditional purchasing</p>	<p>1. Specialization by function and object are both contingent upon the effectiveness of the organization's communication networks</p> <p>2. Specialization reduces risks of uncertain environments by relying on subject matter experts within respective divisions of labor and the communication networks between these sub-divisions</p>	<p>1. Specialization allows purchasers to fully understand products and/or functions, which allow them to respond with succinct clarity to complex problems and environmental uncertainty</p> <p>2. Specialization by function allows for more efficient and cost-saving benefits, as purchasing agents familiar with the market can leverage their contacts in the specialized market; for example, making employees responsible for different but logically connected tasks reduces interface problems, which leads to cost-saving outcomes</p>
Configuration	<p>1. Configuration of an organization is based on vertical and lateral spans of control, criteria for segmentation, and the</p>	<p>1. Understanding the type of configuration of an organization offers insights into how to optimize the use of resources</p>	<p>1. Reconfiguration was not found to have a significant impact on a company's overall competitive stance in the market unless changes to</p>

Structural Characteristic	Key Findings	Implications for organizations	Implications for purchasing organizations
	<p>number of positions in various segments</p> <p>2. The degree of formalization and centralization indicates the type of configuration of an organization</p> <p>3. Configuration of an organization is found in an organization's organizational chart, where segments, departments, and activities are visually represented</p>	<p>2. Chief purchasing officers have increased their status and influence within organizations in recent decades</p>	<p>configuration are paired with changes to internal controls</p> <p>2. Chief procurement officers reporting to executive positions within firms increases organizational effectiveness due to higher organizational visibility and the leveraging of additional resources</p> <p>3. The overall size of an organization may not be itself a "critical" characteristic of an organization; rather, bureaucracy within an organization stems more from the complexity of the organization itself</p>
Formalization	<p>1. High levels of formalization minimize variability and control purchasing situations</p> <p>2. Formalization is informed by flexibility, allowed variability, and rigidity of defined roles, authority relations, communications, norms and sanctions, and procedures</p>	<p>1. High levels of organizational formalization lead to more control over individuals limiting discretion and freedom of its employees</p> <p>2. Performance can be assessed more objectively the more formalized an organization is</p> <p>3. Strategic formalization coordinates employees toward a singular vision and goal</p>	<p>1. Despite other benefits, unfamiliar purchasing situations and novel purchases benefit from a less formalized purchasing structure</p> <p>2. Informal strategies of purchasing, less rules, procedures, and instructions may provide benefits to unfamiliar purchases</p> <p>3. Short, repetitive, easily assessed performance and stable environments benefit from greater formalization</p>
(De)centralization	<p>1. The location of decision-making, the promulgation of rules for decisions, the frequency and thoroughness of review</p>	<p>1. Centralization is directly related to the locus of authority, or which level or positions grant authority to take a formal action</p>	<p>1. Centralized purchasing structures ensure professionalism and accountability through the limiting of direct authority and</p>

Structural Characteristic	Key Findings	Implications for organizations	Implications for purchasing organizations
	<p>procedures and control systems, and availability of relevant information are key factors regarding centralization</p> <p>2. Limits of the senior executive's power and the control of activities is key to defining (de)centralization</p> <p>3. Each tier away from the senior executive and how quickly authority is lost is an indicator of (de)centralization</p> <p>4. Public governmental organizations are approximately half centralized and half hybrid structures</p> <p>5. Private sector organizations are approximately one-quarter centralized, one-quarter decentralized, and half hybrid structures</p>	<p>2. Specialization and standardization are considerations of a centralization strategy vs. sitting at the same level</p> <p>3. Increased coordination and control may lead to more effective performance within organizations</p> <p>4. High levels of centralization are more effective only when individuals located at loci of control have a firm understanding of tasks and responsibilities</p>	<p>power of subordinate departments</p> <p>2. (De)centralization is not a one-size-fits-all solution and varies based on the needs and requirements of purchasing organizations</p> <p>3. Higher risks of corruption, fraud, waste, and excessive costs may result from a decentralized structure</p> <p>4. Decentralized structures lead to improved purchase response time, reduced bureaucratic policy and procedures, and improved coordination efforts between organizational departments</p> <p>5. Hybrid structures allow organizations to utilize the strengths of both decentralized and centralized strategies</p>

Although contextual factors provide valuable insights into how an organization shapes itself in response to the various contextual factors of its environment, the researchers concluded that these factors were not central enough to their research to incorporate into their interviews, which are discussed in subsequent chapters of this report.

D. SUMMARY

This chapter provided a literature review applicable to the primary and secondary research questions. Specifically, the literature review was comprised of research into identified structural characteristics of a purchasing organization and related contextual

factors. The nine factors discussed are standardization, involvement, specialization, configuration, formalization (de)centralization, organizational characteristics, product characteristics, and purchase situation. The next chapter includes a discussion of the researchers' methodology, the development of their data collection strategy, the interview process, and data collection procedures.

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IV. RESEARCH METHODOLOGY

In this chapter, we describe our methodology, the development of our data collection strategy, the interview process, data collection procedures used to compile information, and research limitations. The research methodology developed by the researchers was created with the primary and secondary research questions as the focal point of their research. As stated in Chapter I, the primary research question that the researchers aim to answer is:

1. How do the Air Force contracting structure, roles, and authorities compare with the purchasing functions of private sector organizations?

To the maximum extent possible, the researchers also aim to answer the following secondary research questions:

2. What are the advantages and disadvantages of the current Air Force contracting structure within AFMC?

3. How can the Air Force better organize its purchasing structure, roles, and authorities?

4. How do private sector organizations establish roles and authorities within the purchasing functions?

A. RESEARCH METHODS

The primary goal of this research includes addressing how large companies utilize and align their purchasing function within their organizations. The overarching goal was to better understand industry best practices in using the purchasing agent as a strategic tool to achieve a competitive edge over other companies in the same industry, including building alliances with suppliers and utilizing global category management techniques. Specifically, the researchers completed qualitative research focused on understanding and analyzing primarily qualitative data. The researchers followed guidance from *The SAGE Handbook of Qualitative Data Analysis* to identify the meaning of participants' descriptions and explanations and to help guide the understanding of the main ideas

conveyed during interviews (Maxwell & Chmiel, 2013). Redundant and non-value-added data were not coded while analyzing the interview data. Data that was not related to the research questions was determined to be non-value-added. For example, one interviewee discussed their use of surveys to identify skill gaps within their organizations for future internal investment opportunities, which although interesting, was not related to the interview questions. The guidance emphasized the importance of utilizing coding categories in respect to the data so the material and content of gathered qualitative data could be sorted, filtered, and separated from other data. The SAGE handbook reports that many qualitative researchers view coding as fundamental to qualitative analysis and the only activity a researcher will engage in that manipulates data. It is also stated that it is important to understand the risks of neglecting real contextual relationships. This has occurred when researchers fail to consider the context as influential on coding the data (Maxwell & Chmiel, 2013).

The researchers utilized a multiple case study approach. As defined by *SAGE Research Methods Foundations*, a case study “focus [es] on a single person, incident, or phenomenon to examine a theoretical issue in-depth offering a holistic analysis which may employ diverse methods of data collection and analysis” (Thomas, 2019, p. 2). More specifically, the cases may be, but not are not limited to, persons, projects, policies, interviews, and previous research. The subject of the study is comprised of key cases of the structural characteristics as they pertain to the various organizations with which the researchers conducted interviews. It is important to note that the subject of the study was selected due to it being an interesting and illuminating example of the distinctive characteristics of the object (Thomas, 2019). The object, or the analytical frame the subject illuminates, is identifying how the Air Force contracting structure, roles, and authorities compare with the purchasing functions of private sector organizations. Specifically, the objects were derived from the structural characteristics and contextual factors identified in the researchers’ literature review (e.g., standardization, involvement, specialization; Thomas, 2019). Based on the definitions and components of a multiple case study approach, the benefits of considering several cases and looking for themes, takeaways, and

congruities among each individual case, this approach is best suited to answer the research questions posed at the beginning of this paper.

The researchers generated a case history describing each of four firms in business-to-government (B2G) markets. Through the SAF/AQ-sponsored program of Education With Industry (EWI), the Air Force Institute of Technology (AFIT) has developed relationships with many private sector companies. Contacts from the EWI program were used to identify potential companies to interview. The researchers considered the company diversification, company size, diversity of the purchasing function as identified from a business overview, and the potential benefits to the Air Force if the research team were to conduct research on their company. One specific goal when identifying potential companies was to seek out large organizations with workforces comparable to that of the Air Force. As of January 1, 2020, the Air Force is comprised of 328,255 active duty members and 145,789 civilian full-time employees (Air Force Personnel Center, 2020).

In order to collect the information necessary to answer the research questions posed at the onset of our project, our group contacted the Air Force EWI program manager for a list of companies that the Air Force currently held relationships with. From the list of 51 companies the EWI program manager provided, the researchers narrowed the list down to nine companies most likely to provide insights relevant to the research questions. To make this determination, the researchers prioritized having a diverse group of companies to interview and sought companies with greater than 100,000 employees or that were similar in size to the Air Force, companies with a diverse purchasing function, and company background information that assisted with identifying potential benefits. The researchers considered a purchasing function to be diverse if it had more than three segregable business segments. The potential benefits of interviewing each company were considered to ensure that structural and contextual elements could be compared with AFMC/PK. Due to the companies having similar contextual factors, the researchers were able to analyze the structural characteristics. Furthermore, due to conflicts and legal barriers within several companies, the research team identified and developed a backup list of companies to interview contingent upon their success with the originally identified companies.

The researchers sought interview participants in the upper echelons of the purchasing organization or related function, as higher-positioned employees were likely to be more in touch with the adapting strategic vision of the organization while also able to elaborate and explain basic tactical procedures within their organizations to meet strategic goals. A researcher–interviewee agreement was put in place with each participating firm to keep all company-identifying information as well as interviewee details completely anonymous. Thus, names of the focal firms are not listed in this report. Table 2, however, summarizes nonidentifiable background characteristics of nine companies the researchers selected as potential focal cases.

Table 2. Archival Data on Target Companies for Interviewing

Industry	Background Information	Diverse Purchasing Function? (Yes/No)	Larger than 100,000 employees? (Yes/No)
Aerospace, defense	Aerospace company and manufacturer of commercial jetliners and defense, space, and security systems. Manages global partnerships with more than 20,000 suppliers and partners. Operates a diverse four reportable segments. This company produces and markets commercial aircraft and conducts research, development, production and modification of manned and unmanned aircraft, command, control communications, computers, intelligence, surveillance and reconnaissance systems, and space exploration.	Yes	Yes
Technology	Prioritizes the delivery of products and services to each of its customers within its three business segments. Its customers include consumers, sellers, developers and enterprises, and content creators. It currently manufactures and sells electronic devices and develops and produces original media content.	Yes	Yes
Technology	Develops and supports its software, services, devices and solutions to include cloud-based services, platforms, and content, to include online	Yes	Yes

Industry	Background Information	Diverse Purchasing Function? (Yes/No)	Larger than 100,000 employees? (Yes/No)
	advertising. Its various products include computer operating systems, applications, business solution applications, desktop and server management tools, and video games.		
Package delivery, supply chain management solution provider	Provides package delivery services, transportation and distribution, contract logistics, ground freight, ocean freight, air freight, customers brokerage, and insurance and financing services to more than 200 countries and territories worldwide. It operates three key business segments.	Yes	Yes
Global airline company	In addition to its main airline tickets revenue stream, this company has created revenue streams to reduce risk from cyclical trends to include a subsidiary energy company for fuel supply solutions.	Yes	No
Defense technology	Operates within five business segments to develop products, services, and solutions to include but not limited to land- and sea-based radar solutions, combat and ship electronic and sensing systems, cybersecurity, missile and combat systems, and space systems.	Yes	No
Technology	Designs, manufactures and markets smartphones, personal computers, and tablets and sells other services. The primary customers of its products and services include small and mid-sized businesses, consumers, education, and government markets.	Yes	Yes
Global airline company	Transports its customers and cargo to domestic and international destinations to include North America, Asia, Europe, Africa, the Pacific, the Middle East and Latin America.	Yes	No
Transportation, e-commerce and businesses services	Operates four business segments to include services such as transportation, e-commerce, and business services to more than 200 countries and territories. It also covers services that support its main transportation business segments.	Yes	Yes

In 2005, the Government Accountability Office (GAO) developed a framework to counter and prevent poor acquisitions processes and structures within the federal government. The intent of the framework was to equip government agencies with the knowledge, tools, and feedback necessary to improve their ability to acquire goods and services efficiently and effectively (GAO, 2005). The GAO used the framework when consulting federal government and industry leaders to answer GAO research questions. The researchers used the GAO framework questions as a basis for our interview questions. The GAO's research is closely related to the research of this paper and hence served as the basis for the creation of the interview questions. The questions were modified only when necessary to make logical and coherent sense in the context in which they would be asked. More specifically, the questions used in the research were focused solely on the six structural characteristics identified in the literature review, as the research is focused on using those characteristics as the framework for answering the research questions.

The interview questions had two objectives when designing the interview questions. First, the interview helped define and elaborate the functions, strategies, structures, and practices each organization engaged in with respect to its purchasing function. The researchers utilized data from the interviews and open discussions with the participants to compare Air Force purchasing functions with each respective private sector organization. Second, the interviews were designed to elicit information from a diverse group of companies to provide multiple perspectives and insights and allow the researchers to consider a wide range of factors when analyzing the data.

B. DATA COLLECTION PROCEDURES

All interviews were held remotely via a videoconference or teleconference platform. Interview questions were provided before each interview for the participants to review at their discretion. A brief explanation of the interview and purpose was given within email correspondence and at the beginning of each interview. Organizations that did not respond within a timely manner were eliminated from the researchers' interview pool.

The researchers' first step to collecting data was an analytical discussion between the researchers and procurement experts or senior executives of large corporations.

Interviews were held with a vice president, head of global supply chain management, chief counsel to the chief procurement officer, global government contracts compliance officer, and a senior subcontracts manager. These interviews generally lasted an hour, and interviewees were picked due to their placement in the procurement function as a subject matter expert for that specific corporation. During the interviews, one researcher was responsible for asking all interview questions, while a second researcher observed and ensured that the discussion was relevant to their research questions, and the third researcher strictly observed and transcribed all questions and answers. A list of questions asked to interviewees is in the Appendix.

As a second step, the researchers held an approximately one-hour interview with a distinguished professor of supply chain management with 30 years of experience at a top U.S. institution. Their subject matter expertise included the fields of supply chain management, purchasing function organization, and organizational performance. The interview allowed the researchers to supplement and extend their analysis of data with subject matter expert considerations.

The researchers additionally consulted many documents throughout the research process. Documents and reference material consulted included company Form 10-Ks, company websites, journal articles and papers written about companies, and performance history. A summary of data sources and their quantities is found in Table 3.

Table 3. Summary of Data Sources and Quantities

Data Source	Quantity
Interviews with private organizations	3 (3 hours)
Interviews with subject matter experts	1 (1 hour)
Documents and reference material	34 documents
Websites	23 websites

Interviews were recorded and transcribed, yielding a total of 21 double-spaced pages. One researcher engaged in coding the data. The researcher, applying SAGE guiding

principles of coding, focused on the application of codes derived from the literature to the interview data. The researcher labeled and grouped selected segments of text into categories based on the theoretical frameworks discussed in the Literature Review (Sun, 2018). Coding results were then discussed among the three researchers to better define, organize, and subcategorize the codes.

At the conclusion of the discussions, the segments of text were grouped into nine codes. Six of these codes came from the original structural discussion found in the literature. Following the detailed analysis of the coded text, the following dimensions were identified: standardization; involvement; specialization; configuration; formalization; (de)centralization or a hybrid model of both, known as a center-led approach; CPO roles; vendor management; and procurement policies. The latter three are elements that came up consistently in the interviews as significant dimensions the companies considered when making purchasing decisions, yet these are difficult to place into just one of the structural components found in the literature, as they are woven throughout all six of the structural characteristics.

For clarity purposes, a brief discussion of the latter three elements needs to be addressed before moving into the research results. It is important to note that these three codes are significant in their own right; however, they each have elements among each of the six structural characteristics and are addressed within those components. The CPO roles code addresses the roles and responsibilities placed on the CPO of the company. This code came to light when interviewees consistently emphasized the placement and role of the CPO in relation to the other C-suite executives. Although the role of the other C-suite executives is important to the overall direction of the company, interviewees stressed that the CPO had a large hand in determining the battle rhythm of the purchasing procedures and employees. The CPO had an advising role to the CEO on best practices in purchasing; thus it was deemed important to discuss this role in the greater scheme of the role of the purchasing agent.

Another code that was deemed significant was vendor management, or how the purchasing function managed its relationship with vendors and business partners. For each company interviewed, a recent focus was a reevaluation of its supply chain management.

Having a good working relationship with vendors appears to have a direct correlation to a company's competitive bearing. This mindset appeared to be a recent shift in the company's strategic objectives, but a shift that was significant to both overall operations and the company's perceived success. For this reason, a company's relationship with its vendors and its management strategy for these vendors became a significant code to incorporate in the overall evaluation of the companies interviewed.

The procurement policies of a company relate to the structural characteristics found in the literature, in how they are formalized and standardized, but they do not address actual methods of how the buying agent buys. As companies start to see their purchasing agent as a strategic asset that can be proactively used to gain a competitive edge, the processes that are put into place become more and more strategically significant. The companies interviewed that actively used the purchasing function as a strategic agent aligned purchasing policies to overall mission and vision goals. This allowed the company to use the purchasing agent not only as a cost-savings agent, but also as a tool to maximize buying potential and operational reach. This was found to be a significant aspect that needed to be addressed in the findings and analysis; thus, the researchers deemed it necessary to address this practice as its own code.

Furthermore, the researchers were unable to assess or analyze the contextual factors within the organizations sufficiently through this study while also acknowledging the variance in contextual factors across AFMC at the centers. In order to adequately assess contextual factors, a specific study would need to be conducted. Additionally, the research team acknowledges that contingency theory is evident specifically for contextual factors and therefore do not believe it to be fruitful to analyze them.

The discussions between researchers led to several findings. The content of the interviews and case studies results in the identification of several considerations and lessons learned, which may be applied to Air Force purchasing organizations.

C. SUMMARY

This chapter presented the development of the researchers' research methods, interview and data collection procedures, the process of coding the data, and research

limitations. The researchers used multiple sources of data including private company interviews of senior-level purchasing executives, consulted with a subject-matter expert, and used case studies to develop our analysis.

The following chapter discusses the results based on the identified codes mentioned in this chapter. First, the interview data is discussed. Then, general results are presented and interpreted. Finally, other remaining data and considerations are discussed.

V. RESEARCH RESULTS

This section identifies the common practices of the placement, roles, and responsibilities of the purchasing function within organizations in the private industry. These following paragraphs summarize research findings from interviews with procurement experts, highlight purchasing characteristics in practice that are consistent with the research, and point to findings that came to light that were both surprising and not necessarily in line with the established research.

The interviews show that the role and structure of the purchasing function fluctuate depending on a number of factors; however, the characteristics that companies consistently relied on in structuring the purchasing agent were centralization, specialization, and standardization of the purchasing function. Although the researchers found a theme of the structural characteristics among all the companies interviewed, the ways in which they were implemented were highly variable. The contextual characteristics were found, but mainly in relation to the structural components, and they were not relied upon. Thus, they are discussed in the subsequent sections within the structural components to which they relate.

A. FINDINGS

The research team analyzed each case based upon the six structural characteristics identified in the literature review. As addressed in the literature review, the three contextual characteristics were not deemed to be central to the research at hand and will not be addressed in the findings and analysis. Three additional themes were found but are related to two or more of the structural components and are thus addressed within the related structural components. Information from each interview was coded based on the respective structural characteristics identified by the researchers. Additional information was gathered on the purchase situation for each respective organization.

1. Organization A (Interviewees: Chief Counsel to the CPO and Global Government Contracts Compliance Officer)

Organization A recently went through a transition in which the purchasing function that was initially viewed as a purely cost-saving function became a strategic asset. This organization is a major logistics company, a leader within the industry, with an international operating portfolio. Over the past 4 years, this organization converted to a centralized purchasing approach, with the chief procurement officer reporting directly to the chief finance officer. Purchasing previously operated autonomously by distinguished regions, but in an effort to optimize spending and prevent duplication of effort, purchasing was restructured to be conducted within a vertically aligned procurement group. The CPO withholds purchasing authority for any purchase of assets greater than \$4 million or any purchase of strategic importance, such as aircraft.

At the time of the interview, the organization was establishing and formalizing procurement policies and procedures. The formalization process is the responsibility of a purchasing center of excellence, which is responsible for analyzing previous purchases that were deemed successful in an effort to replicate those policies across the organization. The organization previously used a purchasing card program that allowed internal stakeholders to rapidly make small purchases; however, due to compliance issues and duplication of efforts across multiple spend categories, the organization is eliminating the program entirely. When the program is fully eliminated, all purchasing, regardless of dollar value or strategic importance, will be routed through the procurement group.

Within the organization, procurement officers specialize their skills based on commodity types or specific spend categories. In situations in which the organization does not have the necessary skillset, it partners with a consulting firm. The organization has recently placed more focus on category management and strategic sourcing. In order to maximize profit, the organization hopes to cut expenses by using strategic sources to fulfill company needs globally.

2. Organization B (Interviewee: Senior Subcontracts Manager)

Organization B is a large manufacturing company within the Business to Government (B2G) and Business to Business (B2B) realm. The purchasing function is a hybrid, center-led model, with aspects of both centralized and decentralized decision-making. A center-led approach allows centralized strategic decisions to be made at the executive level, while also allowing decentralized subunits to perform purchasing functions. Organization B has two lines of authority within this approach, the first of which goes to the functional director, who reports directly to the chief procurement officer. The second is within the specific program, which has its own purchasing authority.

This organization relies heavily on formalized and standardized processes and procedures. Due to the high volume of B2G agreements, the organization's procedures are similar to those outlined in the FAR. Additionally, most of the B2B relationships also follow formalized procedures and regulations. The delegation of purchasing authority is also formalized within the job descriptions for procurement officers. Purchasing authority is based upon a level system as required by each program and requires applicants to demonstrate the knowledge to hold that authority. In order to ensure that purchasers adhere to the formalized processes and procedures, a compliance team reviews all contracts over \$100,000. The compliance team does not fall within the chain of command but serves as a partner in ensuring that purchasers are compliant with regulations.

Specialization within this organization is based upon the program to which a procurement officer is assigned. Organization B does not specialize based upon spend categories, but rather by program. Organization B categorizes and defines a program based upon business function. In B2G, a program is defined as a government program for which Organization B is the supplier and has to manage its supply chain to produce a product. B2B programs are primarily based upon a product line where Organization B has a desired end state as customer. A procurement officer assigned to a program is expected to conduct all purchases for that program, regardless of product type or complexity. The exception to this level of specialization occurs if trends are identified within the formalized purchasing system. A category management team is responsible for identifying multiple requirements across separate programs in order to prevent future duplications of effort. Purchasers are

not required to get a breadth of experience across multiple programs. Procurement officers may continue to work on a program as long as specific metrics were met, allowing for some level of specialization within the purchasing team.

3. Organization C (Interviewee: Vice President, Head of Global Supply Chain Management)

Organization C is an international air carrier based in the United States. The current purchasing function is highly centralized, with a team of approximately 130 procurement professionals. Procurement professionals have the authority to make purchasing decisions up to a dollar threshold, with the final authority coming from the president or vice president of procurement. Exceptions exist for items of strategic importance, such as aircraft, which are procured by the president of procurement. Additionally, procurement officers operate in close coordination with internal stakeholders who determine the purchasing requirements. This team approach, as well as the purchasing authority, allow procurement officers the ability to rapidly respond to requirements.

Rather than formalizing purchasing processes and procedures, Organization C uses a purchasing decision tree to give procurement officers the tools they needed. The decision tree is used as a training tool that allows procurement officers to make better informed decisions based upon specific inputs and situations. The lack of formalized rules allows procurement professionals to make purchases rapidly in what was described in the interview as a complex purchasing situation. While purchasing is centralized within the company, the specific purchases require a global supply chain and intricate communication channels with internal stakeholders and procurement officers.

Procurement officers are responsible for categorizing spend within their specific purchasing portfolio; however, the organization does not rely on purchasing specialization in terms of specific items or purchasing situations. Procurement officers may be required to purchase various commodities or services within their portfolio. The exception is the purchase of aircraft, which is maintained by the president of procurement. The company does evaluate risk within purchasing portfolios as a mechanism to determine the size of the

team required. When specific skillsets are required to support a portfolio, the organization uses consulting firms that specialize in those specific skills.

4. AFMC/PK

As a DOD organization responsible for contracting all products and services for AFMC, AFMC/PK must adhere to the formalized policies and procedures as outlined in the FAR and applicable supplemental guides. AFMC/PK has historically been highly standardized through AFMC-specific mandatory procedures (MP) and Procedures, Guidance and Information (PGI); however, recent guidance has attempted to remove AFMC-specific MPs and PGIs and instead align with Air Force guidance. This paradigm shift harmonizes with the SAF/AQC initiative of “tools not rules.” AFMC/PK does not have contract clearance authority over the individual AFMC centers. Contract clearance authority is delegated to the centers’ Senior Contracting Officials (SCOs), unless otherwise identified in the FAR as requiring SAF/AQC approval.

There is not a push for specialization toward singular products and services. Instead, contract professionals gain a breadth of experience across multiple programs and contract types. Any specialization that is developed is unintentional and a corollary to a person’s time and experience in the career field. Career progression plans advise personnel to gain a breadth of contract experience by rotating among the different program offices; however, these plans are merely recommendations and are not strictly enforced, resulting in individuals staying in certain programs long enough to become “specialized” in that program.

AFMC/PK is decentralized in terms of contract clearance authority; however, it is centralized in terms of command authority. Contract clearance authority is held at the individual centers. This allows the centers flexibility to make rapid decisions, utilizing formalized FAR regulations as checks and balances to ensure that acquisitions are legal and appropriate. AFMC/PK holds centralized command authority delegated from the Air Force Materiel Command Commander (AFMC/CC). Additionally, the role of AFMC/PK is to ensure that acquisitions align with the AFMC strategy and guidance. This approach

can be considered a modified hybrid approach, with AFMC/PK implementing and aligning strategy centrally and decentralizing contract clearance.

5. Supply Chain Expert (Distinguished Professor of Supply Chain Management)

The researchers interviewed a supply chain expert with 30 years of experience at a top U.S. institution to solicit information on how the purchasing function impacts supply chain management and category management. The interviewee indicated that first it must be understood that private sector companies exist in a cost-driven culture. In cost-driven culture, the easiest way to increase cost savings is to simply exhaust supplier capabilities; however, recent evidence indicates that this is not an effective long-term strategy. The interviewee indicated that when analyzing the purchasing function, there must be an understanding that two groups exist, those focused on the procure to pay (P2P) function and those focused on transactional execution. In order to effectively implement P2P, organizations must first understand how to categorize spend data and then use that data to determine what categories to organize by spend.

The expert explained that a two-phased approach is necessary for effective P2P and category management. First, organizations should focus resources on conducting spend analysis and analyzing that data against suppliers and their respective supplier risk. The second phase should be focused on category management, allowing procurement professionals to become experts within their respective categories in order to become embedded within those categories. Category managers should be focused on market intelligence in order to develop formalized category strategy that describes how to build and manage that category.

The expert indicated that an important factor to consider is the impact of technologies on spend analysis and category management. Category managers should be in close communication with a technology team with the intent of developing systems that automate spend analysis and category management as appropriate for that organization. Additionally, category managers should be interacting with customers to determine requirements and how they fall within specific categories.

Lastly, the expert indicated that there is no specified model that describes how to effectively organize the purchasing function within the organization. The expert discussed the impact of organizational strategy, specifically the impact that a new CEO can have on the purchasing function if they have little data to support their decision. The expert argued that rather than analyzing the specific organization of the purchasing function, it may be more effective to analyze the internal controls of the purchasing function. Table 4 summarizes the structural characteristics of the focal organizations identified.

Table 4. Structural Characteristics of Interviewed Organizations

	Organization A	Organization B	Organization C	AFMC/PK
Standardization	Move toward standardized procedures in recent years due to duplication of effort among various categories of spend	Highly standardized procurement process, with deviations based on procurement type and program	Limited standardized procedures	Highly standardized procedures, moving toward decreasing the mandatory procedures (MPs) and Procedures, Guidance, and Information (PGIs)
Involvement	CPO reports directly to CFO, vertical involvement	Director is responsible for various programs and is involved in procurement decisions, reports to CPO for procurement decisions and global supply chain for strategic decisions; upper management is very involved	Limited upper management involvement unless the procurement is of strategic importance	Limited involvement from AFMC/PK; centers have purchase authority unless required by the FAR for SAF/AQC clearance
Specialization	Procurement team is based on the type of commodity	Procurement professionals specialize by program but perform all procurement aspects within that program	Not specialized; procurement professionals conduct categorized spend within their portfolio	Not specialized; procurement professionals (military and civilians) have career progression plans that allow for a breadth of experience

	Organization A	Organization B	Organization C	AFMC/PK
Configuration	Lateral configuration with procurement professionals grouped into teams based on commodity (4–6 people), support from consulting firms responsible for conducting market intelligence, and an audit department	Lateral configuration; procurement teams are supported by a compliance team; communication is encouraged between procurement and compliance, with decisions held in a formal chain of command	Vertical configuration with the entire procurement team co-located. Some aspects of lateral communication based on partnerships with other organizations that communicate among procurement teams	Vertical configuration for AFMC/PK
Formalization	Becoming formalized; developing Center of Excellence charged with formalizing the purchasing process	Formalized delegation of authority and purchasing policies. Minimal deviations from formalized policies and procedures	Not formalized; rather than specific processes and procedures for procurement, Org C is focused on educating procurement professionals to make decisions based on specific inputs	Highly formalized processes and procedures for acquisitions based on the FAR; contracting officer authority formalized by 41 U.S.C. § 1702 and FAR
(De)centralization	Decision-making is centralized with the CPO based on dollar value (\$4 million +) or strategic level of significance	Hybrid model utilizing a centralized approach, centralized strategic decisions with decentralized sub-units conducting procurement	Highly centralized and vertically aligned	Decentralized contracting authority with centers maintaining contract clearance authority unless otherwise identified by the FAR (over \$1 billion requires SAF/AQC approval). Centralized command authority delegates from AFMC/CC

B. ANALYSIS

The research team identified several advantages and disadvantages of AFMC/PK structural characteristics when compared to the interviewed private sector organizations which will be discussed in the following sections.

1. Standardization

A common practice of private companies is to standardize their purchasing procedures; however, the research team found that companies varied their purchasing procedures based on the customers they were serving. This initial finding is consistent with the literature regarding standardizing processes, which states that the practice positively correlates to a company's success in a competitive market as it clears the air of any ambiguities. This practice consistently appeared across companies of various missions and industries in extant research, suggesting that following a common operating procedure clears any gray area in purchasing decisions in any industry and allows for the purchasing agent to optimize spend in both critical and routine buys.

We found that centralization of the purchasing agent plays a key role in a company's decision to standardize its purchasing processes. In interviews with Organizations A and C, which have completely centralized their purchasing agents, there was less need to standardize, as purchasing for the entire company was handled by a small group of individuals who were all well-versed in the established purchasing procedures. It was only recently that these companies shifted to thinking of the purchasing agent as a strategic component; thus standardization of purchasing had not been considered previously. Although there was less need, the companies were considering standardizing purchasing procedures for some routine purchases by formalizing their purchasing procedures for continuity purposes and expediting purchases that were necessary but of less strategic importance. As mentioned previously, Organization A had recently started utilizing a common purchasing website for smaller purchases such as office supplies, a concept that is found in government contracting as well and is often considered a successful program. Organization B utilized standardization of purchasing processes for established weapons systems and program offices, but the practice was not strongly emphasized in the

interview as a best practice. There was a larger emphasis on the autonomy available for purchasers who held buying authority at higher dollar thresholds to allow for quick decisions on purchases that fell in more ambiguous and less developed realms, such as developing technologies. As a check, Organization B utilized an internal auditing component separate from the purchasing organization that was dedicated to ensuring compliance for these autonomous decisions. This committee merely tells the purchaser whether the decision is within the legal boundaries of business practices. Organization B was also in the process of standing up a Center of Excellence to standardize and publicize best practices in procurement in order to optimize its spending power. This Center of Excellence will stand as a reference point for other purchasers to communicate best practices but will not necessarily tie them to one method over another. This simplified clearance threshold and establishment of a single focal point both allow purchasers more flexibility and autonomy in their decisions and are found to be best practices for this type of company.

Although the practice of standardization itself was consistent, the reasons for implementing it varied among companies, depending on their focus. Companies that focus on manufacturing, compared to delivery and distribution, were ahead of the curve regarding standardizing purchasing procedures. This finding is also consistent with the literature regarding the situational characteristics of a company in that the product type influences the role of the purchasing agent within a company. Reasons ranged from correcting historical missteps to mirroring practices found in the government.

AFMC/PK is highly standardized in its processes and procedures in utilizing the FAR, its applicable supplements, and mandatory procedures. This practice aligns with Organization B, which is appropriate; however, these organizations differ greatly in how Organization B successfully incorporated certain rules that allowed unique, non-standardized decisions to be made at the lower purchaser levels. In addition, this practice led to a high perceived level of work satisfaction by employees and high degrees of ownership from purchasers with this authority. While the high degree of standardization found at AFMC/PK does have its place and is appropriate for routine purchases and buys, a degree of autonomy in areas that are less developed and require quick decisions or more

flexibility, such as developing technologies, has been shown to provide many unique benefits in the appropriate situations.

2. Involvement

The dimension of involvement proved to be a lower priority for the focal companies, with only small degrees of vertical and lateral involvement. This omission proved to be unintentional; however, when pressed about the degree of lateral and vertical involvement, the interviewees all expressed that communication among entities was not significantly emphasized from leadership as a metric of success.

Vertical involvement was only emphasized in the large defense contractor as an important rule of engagement. This was executed in establishing review and approval levels within the chain of command as a measure of peer review, yet the interviewee expressed that this procedure was an effort to align with best practices found in its largest customer, the DOD. In addition, this emphasis on approval levels via the chain of command was less emphasized than it is in the Air Force, for the defense contractor also relied on technology and a purchasing/contract writing system that had internal checks and balances as well. This reliance on technology and smaller degree of emphasis on lateral involvement aligns with the research conducted by McQuiston (1989). In regard to lateral involvement, the large logistics company addressed communication among the entities; however, they did this only to the extent that the purchasing function worked with other entities to understand their requirement, but nothing more beyond that relationship was emphasized as important. This is contrary to the literature stating that there exists a strong correlation between high levels of communication between departments and a company's perceived financial success, specifically measured by the success of the purchasing function in getting the best product at the best cost (Glock & Hochrein, 2011).

For Organization C, lateral and vertical involvement was less emphasized as a result of having a very small, centralized purchasing function. This is consistent with the research that shows both lateral and vertical involvement increase when a company deals with products or services that are higher in risk than normal, day-to-day purchases. Although it was surprising to find the lack of emphasis on lateral and vertical involvement, the

companies interviewed confessed that the procedures and roles of the purchasing function had never been examined through a strategic lens until recently; thus a look at the degree of lateral and vertical involvement might be something to consider in the future.

Both lateral and vertical involvement is something the Air Force, and AFMC/PK, does quite well in comparison to the private sector. There is always room for improvement, yet AFMC/PK recognizes the advantage in working in an environment that fosters high levels of communication both up and down the chains of command and across the departments within each center. The degree to which that is actually practiced could not be accurately assessed, as interviews were not conducted with the centers themselves or with Air Force Installation Contracting Center (AFICC). As a result, the nature of this finding is partially skewed. By nature of its size and wide portfolio of mission sets, AFMC cannot function properly without effective communication between its purchasing function and the supported entities.

3. Specialization

The companies interviewed all incorporated a degree of specialization to their purchasing procedures, seen as a best practice for knowledge management and streamlining acquisitions. The level to which the specialization was adopted varied depending on the centralization of the purchasing agent and the product produced. For example, Organizations A and C, with centralized purchasing agents, incorporated a degree of specialization by allotting important buys to certain procurement experts. In their interview with Organization C, the researchers learned that all of the purchasing for the fleet of airplanes was done by one individual who had the appropriate level of authority, knowledge, and expertise to execute a critical purchase category for the company. All other purchases were done by separate, centralized purchasing functions, dividing work less by specialization and more by workload management. In the interview with Organization A, the researchers were told that the centralized purchasing agent was divided into different sectors, specializing in categories parsed out by the customer. As a result, the other functional areas of the company had a specialized purchaser who worked with the customer to determine the need and could then complete the purchase for that functional area,

because of the purchaser's established history with that functional area. This was a new tactic that had recently been implemented, but it had been well-received when compared to the previous decentralized strategy in which purchasers were assigned to a region and responsible for a portfolio of buys.

For a more decentralized company, specialization still has its place and function. In an interview with Organization B, the purchasing expert discussed how the decentralized structure allowed for specialization organically. The purchaser is assigned to a specific program office that does the purchasing for one specific product or weapons system. Within that program office, the product is broken down further into different levels and parts to the weapons system, with a purchaser assigned to each part depending on the dollar threshold of that specific part. There might be some overlap in purchasing strategies laterally across program offices, but predominantly, the purchasers in a program office specialize in the purchasing strategy and tactics of that one program office. This allows the purchaser to fully own the product, find the best suppliers, and build strategic relationships with the corresponding supply chain. These relationships and purchasing strategies are critical to the success of the defense contractor due to the nature of the product they create and the main customer they serve.

The researchers found that AFMC/PK does not emphasize specialization in knowledge management toward a specific category of purchasing. This is not to say that specialization cannot be found within AFMC/PK; however, any specialization that is found is a mere consequence of an individual's tenure in the office. On the contrary, AFMC/PK utilizes both a civilian and military career progression program that emphasizes a wide range but also deep knowledge of contracting procedures for all products and services. This finding does not align with the companies interviewed, and it is recommended that opportunities for specialization by both civilians and military members be considered for future implementation.

4. Configuration

The structural characteristic of configuration, in regard to established chains of command, was not a strong element found among the companies. Both Organizations A and C had one purchasing office that reported to the CFO. In Organization B, the individual directors reported to the global supply chain directors, who ultimately reported to the CEO. This is consistent with previous research that identified direct reporting of the CPO to C-suite executives advantageous for improved purchasing performance and efficiency (Trent, 2004); however, when interviewed organizations were asked about the advantages of the respective configurations, they were unable to identify any tangible advantages.

AFMC/PK relies heavily on established chains of command, especially considering that it falls under two major commands. Having established command structures eliminates any confusion on where command authority lies, who is responsible for what authority, and who answers to whom; however, in terms of contracting authority, AFMC/PK does not have clear lines. In relation to private sector organizations, AFMC/CC would be the equivalent of a CEO, with AFMC/PK not an active part of the purchasing process. Instead, SAF/AQC, with contract clearance authority over \$1 billion, serves as the CPO, and the individual centers are delegated purchase authority less than \$1 billion. This configuration is inappropriate for SAF/AQC and AFMC/PK since SAF/AQC does not fall within the chain of command of AFMC.

5. Formalization

As discussed in the previous chapters, the structural characteristic of formalization, or extent to which the purchasing processes and procedures are codified and relied upon to control for variables, was not strongly present in the companies interviewed. It is another characteristic in which AFMC is leading the charge; however, a position on the far side of formalization also serves as a hindrance to innovation, speed, and potentially work satisfaction, as discussed later. A new attempt in that direction was expressed by both Organization A and Organization C to account for variables in purchasing decisions and tighten up processes that had never previously been documented or formalized. This shift

toward efficiency by formalizing processes and procedures aligns with the research conducted regarding formalization.

Organization B had defined roles and responsibilities that gave the purchasing organization an internal structure. The company also relied upon policies and procedures that mirrored the FAR; however, the interviewee emphasized that purchasing decision flexibility was granted to purchasers authorized at higher dollar thresholds so they could operate autonomously, which would allow for more flexibility and efficiency. The idea was also expressed that this method of autonomous purchasing decisions led to greater work satisfaction from the purchasers working at this company. When pressed on how the company checked for compliance issues, the interviewee explained that all purchases were vetted and checked through the purchasing IT system used by the company, thus allowing for purchasers to make unique decisions from time to time when deemed necessary, but still ensuring that all purchasing decisions aligned with the company's overall strategic vision and mission. This hybrid model of formalization that trades risk in formalizing procedures based on the complexity of the task or environment in which the task is performed also aligns with the research conducted on formalization.

If Organizations A and C represent one side of the spectrum in which few procedures and policies are formalized, then AFMC represents the other side, where most all policies, procedures, and communication to that extent are documented and formalized. This extreme has both benefits and downsides, with one significant benefit being that there is little confusion or gray area for routine purchases, leading to faster execution times; however, in a world where there is an increasing reliance on new and emerging technologies but no formalized policy on these technologies, then operations could potentially slow down or come to a standstill until said policy is discussed, approved, and formalized.

6. (De)centralization

Before diving into the individual characteristics laid out in the literature review, the researchers first looked at the role of the purchasing function in the overall strategy of the organization as discussed by the experts. The literature emphasizes the significance of the

purchaser's role in the grand scheme as a critical player in streamlining operations, saving manpower hours, and building strong alliances with suppliers. In our interviews and research, the significance of the purchasing agent was recognized but not always to this full extent, and in some cases, for reasons other than pure finances. An interview with Organization A revealed that the role of the purchasing function had never been fully recognized until 2016. By trying to keep up with adaptations to faster and smarter technologies, this company came to the mindset of using its purchasing agent as a tool for competitive success rather than just a purchaser.

In an interview with Organization C, the researchers were told that the company had also just recently reviewed the strategic role of the purchasing agent. Instead of just focusing on how to streamline acquisitions, this company decided to also strengthen its relationships with suppliers by offering to invest in start-up companies to disrupt current duopolies for various purchasing categories (e.g., food catering). By investing in start-ups that threatened the established duopolies, this corporation was not only able to give small businesses opportunities to refresh recurring services, but also drove the prices down while increasing the quality of the products and services offered by the incumbent contractors. This shift in strategy was driven by a customer-focused mentality rather than a profit-driven mentality. In a similar scenario, purchasing experts completed a case study of an energy company and found that the role of the company's purchasing agent was built into its mission statement (Handfield & Nichols, 2002). Instead of solely seeing purchasing as a function of saving money and increasing stakeholders' value, the energy company saw better purchasing as a way of gaining loyalty with customers, or in a sense, of streamlining supply chains to increase the company's responsiveness to a dynamic set of customer needs. Although the literature reviewed emphasized the critical role of the purchasing function to the overall success of the company, our research found that only a few companies were actively using it as a tool to gain a competitive edge within the global market.

When looking at the structural characteristics of the purchasing function, the manner in which a company centralizes or decentralizes its purchasing function clearly plays an important role in aligning the purchasing function with the company's greater

mission and vision. At the time of the data collection, Organization A was currently in the process of going from a decentralized purchasing process, meaning that it operated and managed regionally, to a more streamlined, centrally managed purchasing structure. In this restructuring, one office manages the purchasing for the entire enterprise. This central office is deliberately placed with the C-suite executives, whereas it was previously managed under the financial functional arm of the company. By nature of this set-up, the higher level executives, including the CPO and CEO, have a significant influence over all of the purchasing procedures used in the company. In a financial analysis, the company found that centralizing the purchasing procedures to one office while also providing a central marketplace for common office supplies, similar to the General Services Administration used by the DOD, would not only streamline routine purchases but also create opportunities for research and development from the money being saved and reallocated. Similarly, Organization C also centrally manages all of its procurement except for the airbuses themselves. This purchasing function manages a \$6 billion portfolio in an office of 90 individuals. This alignment mirrors the fact that Organization C keeps all of its management and administration to one physical location as well, although they operate in hundreds of cities around the globe. By tightening the administration chain of command and centralizing its purchasing function to one office, both companies seek to optimize spending to the greatest extent possible and have achieved significant success since in doing so.

On the other end of the spectrum, in Organization B, the purchasing process is a much more hybrid model of (de)centralization that allows buyers the flexibility and opportunity to specialize in the product or prototype they manage. This structure is more lateral-based, as the purchasing function is broken up by program, and each program office has its own internal purchasing structure, starting with a director who oversees 70 purchasers within each directorate. The company centrally manages the processes and procedures of how purchasing will be executed, but the execution of that purchasing flows down depending on dollar threshold and is mainly executed at the lowest levels. The senior executives have little influence over what is bought, unless there is a strategic shift from the top down in regard to building a strategic shift in purchasing. For example, at the time

of this interview, the senior executives of the large aerospace company recommended building a strategic alliance with another country by investing in the infrastructure and manufacturing of that country by flowing more purchases from this specific partner.

An important note regarding the success of centralizing versus decentralizing the purchasing agent lies in the communication practices between the various functions (e.g., Human Resources, Legal) within the greater organization. The researchers found that companies that completely centralize their purchasing agents—meaning they have one purchasing agent for the entire organization—rely heavily on lateral communication among the various functions; thus, although the purchasing agent is responsible for purchasing, members from other functional areas are involved in the purchasing process. This allows the purchasing agent to fully understand the requirement needed and streamline the acquisition process to be as efficient as possible. In the decentralized purchasing situation, communication is not nearly as emphasized from higher management or relied upon at the lower levels of purchasing. With more flexibility in purchasing decisions, a purchaser in a decentralized situation relies less on communication among the various departments and instead on the checks-and-balances system found in both the physical purchase-writing system and peer-review process to correct for mistakes and errors.

In comparison, AFMC/PK incorporates elements of both centralization and decentralization in its organizational structure, a blend that is appropriate for its mission, the size of the organization, and the contract portfolio. AFMC/PK falls under the command of both AFMC and AFICC, each serving a different purpose. From a command perspective, AFMC/PK has a centralized command structure that stems from AFMC, optimizing command and control procedures up and down the AFMC chain and then across the functional areas of AFMC, allowing them to be uniform. This is the best structure in regard to command, control, and general administration. In contrast to the other functional units of AFMC, AFMC/PK maintains the responsibility for executing contracts, for which its contracting authority comes from AFICC. In this sense, AFMC/PK utilizes a decentralized authority structure. This is due to AFMC/PK delegating contracting decisions to the centers within AFMC/PK. For example, anything above a certain threshold skips coordination with AFMC/PK and AFICC and is routed straight to SAF/AQC for contract clearance. This

semi-hybrid structure is appropriate for how AFMC/PK conducts business while coordinating with AFMC on administrative matters; however, it could be significantly improved by streamlining contract clearance authority to AFMC/PK and, thus, centralizing authority. This centralized approach allows AFMC/PK to become the CPO with direct reporting to the CEO equivalent, AFMC/CC, in a centralized purchasing structure for contracts greater than \$1 billion. Given the size of the individual center contract portfolios, decentralized contract clearance authority under \$1 billion is appropriate.

7. Assessment and Ratings

The researchers provide an assessment of each organization in terms of its implementation of specific structural characteristics. Information gathered during the interview process was used in addition to other research into the individual organizations. This assessment attempts to provide insight into the success of the organization's current purchasing structure in comparison to AFMC/PK. The ratings are based upon the organization's specific approach to each structural characteristic and provide an assessment on the implementation within that organization. Based on contingency theory, the same approach is not always effective for each organization; therefore, the assessment is based only on that organization's implementation and the effectiveness in meeting the organization's purchasing objectives. Table 5 summarizes the ratings for each organization in the respective structural characteristics. Ratings for each organization identify the effectiveness of their implementation of each structural characteristic. Ratings are on a scale of -, +, and ++, indicating ineffective, somewhat effective, and very effective, respectively. These ratings are ultimately grounded from the team's assessment of the interviewees who stressed their specific company's strengths and weaknesses. These attributes are also weighed against the organization's mission and vision to assess whether the current structure was appropriate for that organization. Table 5 also shows the chosen level of each structural characteristic for each organization (e.g., high levels of standardization, high levels of involvement, etc.).

Table 5. Assessments and Ratings of Organizations

Characteristic	Organization A	Organization B	Organization C	AFMC/PK
Standardization	+High Standardization	++High Standardization	++Low Standardization	+High Standardization
Involvement	+High Involvement	+High Involvement	+Low Involvement	-Low Involvement
Specialization	++High Specialization	++High Specialization	+Low Specialization	-Low Specialization
Configuration	+Lateral Configuration	+Lateral Configuration	+Vertical Configuration	+Vertical Configuration
Formalization	-High Formalization	+High Formalization	+Low Formalization	+High Formalization
(De)centralization	++ Centralized	++Hybrid	+Centralized	- Hybrid

a. Organization A

Organization A appears to have an effective organizational structure to meet organization objectives. The interviewee indicated that the organization has been transitioning from a decentralized purchasing process to a centralized purchasing process over the past three years. This transition appears to be beneficial in preventing ineffective spending and potential fraud issues experienced under decentralized purchasing. Formalization within Organization A is an ongoing process; the interviewee indicated that they are beginning to formalize processes with the intent of having a highly formalized purchasing process.

b. Organization B

Organization B was the most effective organization interviewed based upon the interviewee’s comments. The organization mirrored some government structural characteristics such as standardization and formalization, while also allowing procurement

professionals to specialize. This appears to be an advantageous approach, particularly within the company's B2G segment. One characteristic that stood out as effective for Organization B was the implementation of a hybrid decision-making approach. Organization B successfully implemented the hybrid approach by allowing centers to make purchasing decisions and the global supply director to implement strategy.

c. Organization C

Organization C had a different approach than other organizations, with low standardization, involvement, specialization and formalization. The interviewee did indicate that there is some level of specialization within specific programs; however, that is often unintentional. One disadvantage of the low involvement approach was alluded to during the interview when discussing combatting duopolies among suppliers. The interviewee indicated that this situation required involvement by the CPO in order to resolve the matter in an advantageous way. One advantage to the low formalization and standardization approach is the flexibility to develop innovative solutions to problems. The interviewee discussed an angel-investing approach to spurring competition among suppliers to achieve advantageous prices for the organization.

d. AFMC/PK

AFMC/PK is required to abide by DOD acquisition procedures and, therefore, is forced into formalized and standardized acquisition procedures; however, the movement to remove the AFMC-specific MPs and PGIs appears to be advantageous to the centers. AFMC/PK's hybrid approach to decision-making and contract clearance authority is unique, implementing both a decentralized contract authority and centralized command authority construct. AFMC/PK is responsible for aligning both SAF/AQC and AFMC strategy within the AFMC contracting centers. While this hybrid approach appears to be beneficial to the centers, it does appear to be a counterproductive alignment for AFMC/PK. Currently, AFMC/PK has low involvement in purchasing decisions. Current alignment has AFMC/PK under both SAF/AQC and AFMC/CC, lends to the idea that SAF/AQC serves as the CPO and AFMC/CC laterally configured as the CEO, rather than a CPO reporting directly to the CEO as found in many private sector organizations. Lastly, AFMC/

PK seems to have low levels of specialization, opting for more breadth of experience than specialized experience.

8. Analysis Summary

Our research identified several advantages and disadvantages of AFMC/PK structural characteristics when compared to private sector organizations. Table 6 summarizes the comparison of AFMC/PK to private sector organizations and previous research into structural characteristics. It is important to note that contingency theory indicates that the appropriate structure for an organization is largely based on the mission and strategy of that organization, which was not researched in this study. Analysis is based upon the AFMC/PK’s implementation of individual structural characteristics as compared to previous literature and trends found among private sector organizations interviewed during this research.

Table 6. Comparison Summary of AFMC/PK to Private Sector Organizations

Characteristic	Implications for Purchasing Organizations	Private Sector Organization Analysis	AFMC/PK Analysis
Standardization	1. Standardization of an organization’s procedures, materials, and personnel closes the gap between risk and uncertainty by decreasing variability in each aspect.	1. Private organizations interviewed are trending to highly standardized procedures with some deviations based on organization strategies and goals. 2. The organizations that had high standardization also further appear to be concerned with risk due to significant upper management involvement.	1. High levels of standardization within the Air Force are appropriate to close the gap between uncertainty and risk; however, previous AFMC-specific MPs and PGIs were acknowledged by AFMC as delaying the procurement process and were subsequently removed.
Involvement	1. Purchasing organizations identified that uncertainty in purchasing situations	1. Organizations with high upper management involvement, such as	1. AFMC/PK has limited to no involvement in purchasing decisions. Limited involvement in

Characteristic	Implications for Purchasing Organizations	Private Sector Organization Analysis	AFMC/PK Analysis
	<p>leads to a dependence on communication networks rooted in vertical involvement and less reliance on communication networks rooted in vertical involvement for predictable purchasing environments.</p> <p>2. Lateral involvement is more important as risk and uncertainty of the purchasing decision increases.</p> <p>3. Decreased vulnerability of risk and uncertainty is associated with larger purchasing organizations but also reduces the influence of its individuals within the organization.</p>	<p>the CPO reporting directly to the CEO/ CFO, appear to be primarily concerned with procurement risk and uncertainty. The organization with limited involvement appears to accept more risk.</p>	<p>this specific case also indicates that there is likely little vertical communication. Potential positive impacts of low involvement include flexibility in purchasing at the center level and increased innovation.</p>
Specialization	<p>1. Specialization by function allows for more efficient and cost-saving practices.</p> <p>2. Specialization allows purchasers to fully understand products and/or functions, which allows them to respond with succinct clarity to complex problems and environmental uncertainty.</p>	<p>1. The organizations interviewed all acknowledged the advantages of specializing various functions of procurement. The determining factor in whether the organization specialized or not was based on organization objectives and priorities.</p>	<p>1. Given the AFMC mission, specialization does not seem to be necessary for all purchase types. AFMC/PK instead chooses for employees to have a breadth of experience; however, it may be important to analyze potential impacts of specialization within novel or complex purchases (e.g., IT, AI, etc.).</p>
Configuration	<p>1. Efficiency gains within an organization are not due to reconfiguration caused by height and span of control width remaining unchanged.</p> <p>2. CPOs reporting to executive positions</p>	<p>1. Organizations with the higher perceived risk were more likely to configure laterally, relying on lateral communication and a team approach.</p>	<p>1. Researchers in this study found configuration to be the result of the other five characteristics, this is consistent with literature that argues configuration is highly</p>

Characteristic	Implications for Purchasing Organizations	Private Sector Organization Analysis	AFMC/PK Analysis
	<p>within firms increases organizational effectiveness due to higher organizational visibility and the leveraging of additional resources.</p> <p>3. The overall size of an organization may not be itself a “critical” characteristic of an organization; rather, bureaucracy within an organization stems more from the complexity of the organization itself.</p>		<p>variable based on organization goals.</p> <p>2. Researchers found no indication that the vertical configuration had an impact on AFMC/PK organizational effectiveness.</p>
Formalization	<p>1. Despite other benefits, unfamiliar purchasing situations and novel purchases benefit from a less formalized purchasing structure.</p> <p>2. Informal strategies of purchasing, less rules, procedures, and instructions may provide benefits to unfamiliar purchases.</p> <p>3. Short, repetitive, easily assessed performance, and stable environments benefit from greater formalization.</p>	<p>1. Formalization varied among all organizations interviewed, with trends toward formalized procedures or delegation of authority. Multiple organizations identified the advantages of a center of excellence approach to model procurement rather than formalized rules and procedures.</p>	<p>1. There is high formalization at AFMC/PK and throughout Air Force contracting organizations due to rigorous FAR and other requirements. Novel purchases at the individual centers (such as AFRL) could be hampered by the overly formalized procedures.</p>
(De)centralization	<p>1. Centralized purchasing structures ensure professionalism and accountability through the limiting of direct authority and power of subordinate departments.</p> <p>2. (De)centralization is not a one-size-fits-all solution and varies based on needs and</p>	<p>1. Organizations are trending toward a centralized approach, with some choosing to adopt a hybrid approach. Multiple organizations identified decentralized purchasing as a major concern in a cost-driven culture.</p> <p>Unaligned spending</p>	<p>1. The hybrid model for AFMC/PK is appropriate given its mission and strategies; however, this model would be more effective if contract clearance authority was held at AFMC/PK.</p>

Characteristic	Implications for Purchasing Organizations	Private Sector Organization Analysis	AFMC/PK Analysis
	<p>requirements of purchasing organizations.</p> <p>3. Higher risks of corruption, fraud, waste, and excessive costs may result from a decentralized structure.</p> <p>4. Decentralized structures lead to improved purchase response time, reduced bureaucratic policy and procedures, and improved coordination efforts between organization departments.</p> <p>5. Hybrid structures allow organizations to utilize strengths of both decentralized and centralized strategies.</p>	<p>was considered to be a major factor in centralizing procurement.</p>	

C. RECOMMENDATIONS

The ultimate takeaway from our findings is that the structure of the purchasing organization is not a one-size-fits-all approach. There are many ways in which AFMC is leading the way in regard to aligning strategic goals and purpose with purchasing organization execution. There are also a few ways in which industry has the advantage, though these vary in their applicability to AFMC. One such industry advantage is that there is less bureaucratic inertia slowing down the execution process. Putting aside that obvious distinction, there are parallels that can be drawn between industry’s focus on Business to Customer (B2C) and B2B relationships and AFMC’s B2G relationships that can give AFMC a competitive edge, as explained in the following recommendations. Our research supports three recommendations: AFMC/PK should address areas of involvement and purchasing policy, decision-making structure (decentralized, centralized, hybrid), and

specialization and formalization. Other structural characteristics analyzed in this study were found to be either less significant based on the data collected, or AFMC/PK was already demonstrating practices consistent within industry and previous research. These recommendations are given in no particular order. It is important to note the following recommendations are based on the preceding literature review, findings, and analysis. The government institutions currently in place would have to be further researched and analyzed in order to effectively implement any of the following recommendations.

1. Strategic Supply Chain Management

Our research shows that a significant challenge to the future success of AFMC/PK, and DOD contracting in general, stems from a combination of a risk-averse culture and historically adversarial B2G relationships (Gansler et al., 2013). The following recommendation focuses on the latter. This recommendation looks to improve AFMC/PK's level of involvement and standardization while also incorporating the theme of adaptable purchasing policy found throughout the companies interviewed. During the researchers' interviews and research, it became evident that companies that held a more competitive posture over their counterparts in the market had made efforts toward fostering better working relationships with their contractors. In short, these relationships were not solely utilitarian in nature, but instead focused on a mutually beneficial business partnership that not only strengthened established B2B relationships but also attracted new, innovative businesses that threatened dominating monopolies and industry concentration, both of which lead to a lack of competition and thus provide less impetus to improve critical products and services.

Strengthening B2B relationships can be carried out in a number of ways. In our interview with a major airline company, the purchasing function found that there were only two large providers of catering services for meals on flights. With this duopoly, the airliner saw prices slowly increase over the years with little leverage to challenge the established contractors. Through market research conducted by the purchasers, the purchasing function found a number of smaller businesses that provided the same catering service, with a greater quality of food, but did not hold the capacity to meet the demands of the major

airliner. As a solution, the purchasing function presented a radical plan to its CFO that showed investing in a number of these smaller companies to build their capital and expand their capacity benefitted the airliner in three significant ways. First, building the capacity of these smaller businesses saved them money in comparison to staying in business with the incumbent contractors. The smaller businesses provided a higher quality product at a fraction of the cost of the incumbents. Second, the higher quality food service turned out to be a huge factor for the consumer, thus building customer loyalty. Third, the incumbents, in turn, came back to the airliner with significantly lower prices than it had offered before, creating more competition in the market. In exchange for investment in their growth, the smaller businesses were contractually tied to this airliner and were prohibited from providing services to other airliners for an undisclosed amount of years. This contractual set-up fostered a trusting, mutually beneficial relationship for both the airliner and small businesses.

According to Gansler et al. (2013), the DOD is not seen as an attractive marketplace for non-traditional contractors and many commercial contractors. A current real-world example of this has played out in the research and development of a COVID-19 vaccine. In a statement on the development of a vaccine, Pfizer CEO Albert Bourla emphasized that efficiency and speed of developing a vaccine was of the utmost importance; thus, the company refused to accept government funds in research and development to “liberate our scientists from any bureaucracy” (Klar, 2020). Bourla did not state that his refusal was directly tied to terms and conditions outside data rights, time to get on contract, or post-award management. It could be a combination of the factors listed or simply be a data rights issue; however, a risk mitigation strategy and a strong loyalty base could alleviate these potential concerns. It is imperative that the government take proactive measures to keep this situation from becoming a trend, as it puts contracting and acquisitions in a weaker competitive posture compared to private markets. In a current effort to mitigate this problem, the Air Force has implemented the Small Business Innovation Research (SBIR) program. This program aims to mirror venture capital funding utilized in private markets (Gaster et al., 2019). This program has been implemented Air Force-wide, and while its role in contracting and relationship to AFMC/PK are not specifically defined, there is

potential for AFMC/PK to create added value to the program and increase its involvement both laterally and vertically. In an empirical study on the long-term effects of the SBIR program, economist Josh Lerner (1999) found that there are many long-term benefits to SBIR awardees, including growth in employment and sales as compared to firms in the same field. However, these firms' continued growth could be attributed to follow-on procurement contracts with the government, which does not necessarily prove the company could be equally successful without their reliance on government contracts. Additionally, the SBIR program tends to focus on niche areas of developing information and technology where there are few start-up companies to begin with (Lerner, 1999). Additional barriers of entry for businesses that would like to enter into B2G contracts are the considerably high costs and manpower hours required to learn the ropes of entering the bid process and submitting a competitive proposal for government contracts (Josephson et al., 2019). AFMC's strict formalization of processes and procedures ties the government's hands in being flexible to mirroring contracts in the private sector and eliminating bureaucracies that deflect companies from entering business partnerships with the government, such as the Truth in Negotiations Act (TINA). In addition, Josephson et al. (2019) pointed out the following additional bureaucracies that might deter businesses from doing business with the government: being subject to federal audits and negative media attention, having required provisions and clauses built into government contracts that establish rights and corrections that might appear unfavorable to the contractor, and the unique aspect of being so closely tied to the specific political climate, which ultimately makes the program subject to potential budget cuts or reductions. Although the companies interviewed stated they were in the process of formalizing procedures to tighten up spending, the major airliner saw the lack of formalization as an advantage to utilizing unique procurement techniques to disrupt non-competitive markets.

AFMC engages the nontraditional vendor base via the SBIR program within the AFRL Center; however, AFMC/PK's specific role is not clearly defined. There are few, if any, Contracting Officer positions within the AFRL. There are examples of SBIRs being executed outside of the AFRL, specifically at Air Force Pitch Day, in which teams across the AFLCMC put together SBIRs, yet this was a unique example found of SBIRs being

discussed within AFMC/PK and outside of the AFRL. It could be incredibly beneficial to have a staff area in AFMC/PK dedicated to strategic supply chain management. Within this element, AFMC/PK can establish a liaison to the SBIR program who gives recommendations or expertise on strategic supplier management across the centers and works with an AFMC/PK small business representative, AFWERX, and the AFRL. In addition, this position could serve as a liaison to AFMC and the AFRL from a purchasing perspective while also serving as a monitor for growing opportunities, identifying new areas where SBIR can be applied and analyzing areas where the B2G relationship can be improved by minimizing entries to barrier or levels of bureaucracy that would normally deter a company from entering into a business relationship with the government. This level of involvement was found to be successful within Organization C and can be appropriately applied to AFMC/PK. This suggestion looks to improve AFMC/PK's level of involvement, both laterally and vertically, in that it creates a key added value as a purchasing advisor to a critical program that is relatively in its infancy but has the potential to both improve the Air Force's access to non-traditional contractors and actively engage in building the market. For the AFMC/PK staff member, it is worth considering looking at the level of bureaucracies incorporated into the SBIR program and whether companies developed within this program can operate fluidly between government and private markets. The Pfizer example mentioned previously presents a potential case study for digging into what bureaucracies deterred the company from accepting government funds and then analyzing which of these bureaucracies are absolutely necessary to the process. The risk of not examining contracting processes to find out which bureaucracies are potential deterrents is substantial in that private companies will look elsewhere for funding in developing critical and necessary technologies in order to circumvent the ties that come with working with the government, thus deteriorating the government's competitive posture in the global market.

2. Assume CPO Role for AFMC

Our research recommends that AFMC/PK assume the role of a CPO for AFMC while maintaining the current hybrid or center-led purchasing structure with some minor modifications to find the right balance of the structural component of centralization. According to our research, private sector organizations rely heavily on the CPO to develop

strategic sourcing strategies and stay involved in supplier selections and procurement decisions. Additionally, organizations that had the CPO reporting directly to the CEO or CFO found improvements in effectiveness within the purchasing function. Organizations interviewed in this study highlighted the role of the CPO in purchases of strategic importance or significant dollar value, such as aircraft procurement within a major airliner.

During our research, it became evident that AFMC/PK currently uses a hybrid purchasing structure. This hybrid approach proves to be the most conducive to streamlining decision-making and provides significant advantages in speed and cost savings compared to a decentralized model; however, in order for AFMC/PK to function as a CPO equivalent for AFMC, there are regulations and authorities that must be delegated from SAF/AQC. We found in our research that AFMC/PK is not the Contract Approval Authority (CAA) for AFMC. The CAA has been delegated to the centers themselves unless required by regulation to be held at SAF/AQC. Due to the situational characteristics within the AFMC/PK acquisition portfolio, a hybrid or center-led approach allows the most flexibility while also maintaining appropriate levels of internal controls. Centralized purchasing structures, while effective in maintaining control, can stifle innovation and present unnecessary delays in complex purchases or complex products. In contrast, a hybrid, center-led approach allows for the advantages of centralized control maintained at an appropriate level, while also allowing decentralized decision-making at sub-units or organizations with specified tasks. The distinction between command authority and contracting authority is important within a center-led approach, given the nature of being able to obligate the government to a legally binding contract. Centers should receive command authority from a source that guides strategic decision-making for the organization at large, such as AFMC/CC.

Our recommendation includes shifting contracting clearance authority from SAF/AQC back to AFMC/PK. For the purpose of this recommendation, contract clearance refers to the authority to approve a contract solicitation and the authority to approve the Source Selection Authority (SSA) to make the decision to award. This movement toward centralized purchasing authority greater than \$1 billion aligns with literature on CPO roles. Currently AFMC/PK is not directly involved in the purchasing process, but is instead responsible for aligning SAF/AQC policies and AFMC strategy within the centers. By

delegating contract clearance to AFMC/PK, this responsibility would shift back to AFMC/PK, giving it an added value in providing critical contract clearance, but with a standing foundational understanding of the requirement due to the proximity of the requirement owner. This alignment mirrors best practices found in industry under the analogy of AFMC/PK acting as the CPO who reports directly to AFMC/CC, which serves as the CEO in this scenario. This is consistent with the previous literature that states organizations with effective purchasing practices often align the CPO role directly below CEO/CFO due to the availability and visibility of resources (Trent, 2004). This shift would alleviate SAF/AQC of clearance authority for AFMC/PK. The intent is not to disconnect completely from SAF/AQC, as the relationship between AFMC/PK and SAF/AQC is highly valuable; however, SAF/AQC will act more in an advisory role, mirroring Organization C's relationship between the CEO and CPO, where the CPO ultimately made the purchasing decisions, relying on the CEO as an advisor when needed for either a critical buy or executing a new purchasing strategy that would significantly influence the organization's operations. It is important to note that our recommendation does not include shifting roles within the centers back to AFMC/PK, but rather delegating roles from SAF/AQC to AFMC/PK. If AFMC/PK were to not more closely mirror CPO roles and responsibilities, the growing importance of AFMC/PK may not be leveraged to its fullest extent and would instead hinder AFMC/PK's influence over its centers.

While our research shows more private companies are moving to centralized purchasing structures, contingency theory indicates that the situational characteristics of the organization dictate decision-making. Some companies interviewed indicated that purchasing decisions for products of strategic importance were maintained at the CPO level, while the company using a center-led approach indicated that individual centers had the authority to make these purchases, provided they complied with strategic policies established by the higher purchasing authority. This concept allows for greater flexibility and more rapid acquisitions while also maintaining acquisition control.

3. Specialized Purchasing Program Tracks

Our research indicates that specialization at the lowest levels of purchasing execution is commonly used among companies to gain a competitive edge in the market. Some companies allow the specialization of skillsets within specific product or purchasing categories, such as commodity purchases or enterprise sourcing acquisitions. Organization B, which is the company that best mirrors AFMC, allowed for specialization, especially in developing areas such as technology. This led to both greater work satisfaction and a higher degree of ownership from the individuals in the specialized categories. In addition, the areas of which specialization is applied is incredibly niche and complex, requiring all individuals involved to be both well-versed in their expertise and also maintain the ability to translate important concepts to the general public in a common language.

All organizations interviewed acknowledged the importance of specialization. Most organizations used consulting firms to fill the gaps of required skillsets, where they had yet to develop specialization. Multiple companies use a program-specific purchasing officer in order to develop better communication within the team and internal stakeholders. Those companies indicated that rather than forcing purchasing officers to eventually move to new programs, those purchasing officers would continue to work on that specific program for an undisclosed time. Those companies indicated that this practice creates more effective teams and has been proven by internal metrics to be advantageous to the program.

It is recommended that AFMC/PK implements a program that allows civilians, and military to the greatest extent possible, to intentionally specialize in areas of high technical complexity and high commercial uncertainty, such as complex technologies and artificial intelligence. This is supported by the literature stating that these are the two factors of complexity to be considered (McCabe, 1987). These two areas are highly technical and require in-depth expertise and knowledge of the intricacies of these systems that a generalization approach neither fits nor is conducive to finding the best resources. These are also two developing areas that will become a great hurdle for the DOD if a proactive approach is not taken sooner rather than later, while the United States' adversaries forge ahead in becoming subject matter experts in these areas.

A program of this sort would require a member of the AFMC/PK staff to not only monitor the success of pilot specialized tracks but also identify developing areas in which the specialized track can be implemented. In addition, the individuals themselves, who are selected to specialize, should be brought to the AFMC/PK staff, mirroring how Organization C allotted its most critical purchase category to a member on the C-suite executive staff due to the product's unique characteristics and significance to the organization's overall success. This positioning on the staff alleviates the member from having to route purchasing decisions that may potentially require quick decisions. Routing a decision where the purchaser maintains the subject matter expertise and the purchasing approval channels are not familiar with the product could lead to program inertia in these critical developing areas. Allowing civilians to specialize in these programs and also fund outside institute education opportunities to learn more about these technologies would provide a great benefit to AFMC/PK's future strategic posture. It would be beneficial to create a committee internal to AFMC/PK to look at its spending portfolio and identify niche areas that require an intricate knowledge of the system and future projection of that system. After identifying the programs and individuals who are willing to opt into a specialization tract, AFMC/PK can partner with higher education institutions that offer classes and specialized tracks in these topics and send identified candidates to specialized courses to learn more about their niche areas of purchasing. This mirrors a number of special experience exchange duty (SPEED) programs offered by the Air Force for acquisition and contracting officers to spend a year interning with an operational system, specializing in that specific weapons system or operational environment, and then bringing that knowledge back to the purchasing world. Not only does this present the opportunity for purchasers to gain a rich understanding of their operating environment, the players in the market, and what to look for in the market, thus applying the best purchasing tactics, but this also offsets the administrative burden that is associated with moving personnel from office to office and reduces the time spent getting personnel up to speed within a program. Furthermore, if specialization is allowed in this way, promotion advancement and position grades may be based on tiers within a specialty as opposed to value being derived from an individual having a less in-depth, but more diverse, set of purchasing experiences.

D. SUMMARY

This chapter included a discussion of the research results of the researchers' study. Specifically, the chapter outlined the researchers' findings, analysis, and finally, the researchers' recommendations for Air Force contracting. In the next and final chapter, the research team provides their research summary, conclusion, and considerations for areas of future research.

VI. SUMMARY, CONCLUSION, AND AREAS FOR FUTURE RESEARCH

This chapter provides a summary of our research and research conclusions and introduces our suggested areas for future research. The purpose of this study was to investigate the structure, roles, and authority of the purchasing functions within large, private sector organizations and compare our findings to the U.S. Air Force's purchasing organization. In Chapter I, we identified the purpose, the importance of the research, our research questions, and the outline of the report.

A. SUMMARY

The importance of the research team's research was driven by the goal to continuously improve the purchasing function within the Air Force. Obtaining a fresh perspective on purchasing structures, roles, and authority strategies from organizations outside of the Air Force may only benefit the Air Force's own capabilities and efficiencies.

This research is the first time the roles, structure, and authority of AFMC/PK has been systematically evaluated and compared to private industry. An additional goal of this research is to provide an executive summary and technical report with recommendations for Air Force contracting in addition to our complete thesis and analysis for consideration in implementing changes and improvements to AFMC's six contracting centers and core mission areas.

B. CONCLUSION

The purpose of this research was to compare and analyze the purchasing functions of large, private sector organizations outside of the U.S. Air Force and to identify beneficial attributes and characteristics of their purchasing organizational structures and designs that could be adopted internally. As mentioned in Chapter I, AFMC's total spend for FY 2020 was \$67 billion, which equated to nearly one third of total Air Force spending for the year. The spending responsibility of AFMC is unparalleled within the Air Force. The Air Force purchasing organizations within AFMC would strongly benefit from research into what other organizations are doing to achieve high-quality quality results and high efficiencies.

The following are the research team's answers to the research questions posed in Chapter I based upon their research and analysis.

Primary research question: How do the Air Force contracting structure, roles, and authorities compare with the purchasing functions of private sector organizations?

Answer: Comparisons between private sector organizations and the current Air Force Contracting structure are largely based on contingency theory and the differences in goals and strategy. Throughout this study, the researchers focused on analyzing AFMC rather than Air force contracting as a whole. This is an important distinction given that not all Air Force contracting organizations can be generalized based on the research in this study. Organizations interviewed indicated that high levels of centralization or various hybrid models are becoming increasingly advantageous in meeting organization goals and managing spend appropriately. Organizations indicated that the size of the purchasing organization is relatively small compared to the overall organization size, and the purchasing organization is maintained with direct reporting to high level executives (CEO/CFO). This allows more internal control of purchasing and better category management practices within the purchasing function. This is vastly different from the AFMC contracting structure as a whole, based upon the goals and the size of the organization. Two companies interviewed had specific mission sets and organization goals that allowed for little variation and the need for multiple skillsets within purchasing. AFMC has a vast span of mission sets and corresponding purchasing skillsets that require a level of decentralization across the contracting community.

Secondary research question 1: What are the advantages and disadvantages of the current Air Force contracting structure within AFMC?

AFMC contracting structure is consistent with industry practices as it pertains to organization goals and strategy. Contingency theory indicates that purchasing structure will vary based upon the goals of the organization. While AFMC's strategy is specifically defined, the required mission capabilities and skillsets are vast. Based upon various purchase situations, it is necessary for some elements of decentralization to be present

within the organization. Therefore, the center-led approach for AFMC/PK is advantageous for meeting the mission demands without causing unnecessary delays. A center-led approach allows AFMC/PK to give flexibility to each center to make purchasing decisions, while also maintaining internal controls, specifically with category and spend management.

A disadvantage in the current AFMC/PK structure is the lack of contract clearance authority. Private organizations interviewed use a structure in which strategic decisions are made within a functional director, while purchasing decisions are maintained with the CPO usually reporting directly to the CEO or CFO. The lack of contract clearance authority at AFMC/PK is not consistent with industry practices and removes AFMC/PK from the purchasing process entirely. In private organizations, CPOs have complete authority over all purchasing professionals, who partner with internal stakeholders to determine how and when to make purchases. Additionally, CPOs are responsible for aligning purchasing goals with the organizational strategies, aided by the direct lines of reporting to the CEO.

Secondary research question 2: How can the Air Force better model its purchasing structure, roles, and authorities?

The research team's research indicates that the Air Force is currently utilizing similar practices, policies, and procedures as large, private industry organizations. It is important to note an iterative and feedback-focused approach, including additional research, will enable the Air Force to vector check its organizational structure and its effectiveness in the future.

Secondary research question 3: How do the private sector organizations establish roles and authorities within the purchasing functions?

Private sector organizations vary in how they establish roles and authorities within the purchasing function, with no two companies having similar practices; however, all organizations interviewed indicated a shift toward allowing complete control of purchasing roles and responsibilities at the CPO level in conjunction with direct reporting to the CEO or CFO. Additionally, all organizations indicated that roles and authorities were either formalized or in transition to being formalized.

C. LIMITATIONS

We identified several limitations of this study. Each limitation is acknowledged and discussed in the remainder of this section.

By conducting interviews with private sector organizations, the researchers hoped to establish a generalization of purchasing practices or obtain information on an exemplar organization. Based on the limited number of responses, neither objective was achieved. A factor for future iterations of this study is the willingness of industry to share information regarding overarching strategy and internal controls. A significant limitation came from companies neither wanting to be identified by name nor divulge information that could lead to a lack of control over how that information would be treated. In order to generalize industry practices in purchasing, more responses are required to allow researchers to identify trends across multiple organizations. Additionally, based on the interviews conducted, the researchers are not able to confidently identify any of the three responders, all on the fortune 500 list, as an exemplar of the industry's top performing purchasing organizations.

The goals of private organizations are vastly different from that of a public organization such as AFMC in this study. The researchers recognize that the goal of making a profit is paramount in private industry, while AFMC is primarily concerned with mission capabilities aligning with public policy and national strategy. Additionally, the vast size of the AFMC in terms of personnel as well as contract portfolio is well above that of any organization interviewed.

D. AREAS FOR FUTURE RESEARCH

The first area for future research would be additional case study analysis in the immediate future on investing in small businesses. One organization discussed the concept of investing in small businesses in order to increase the competitive market for certain products or services. This is similar to the DOD requirement for spend within various socioeconomic groups. The primary difference within this organization was the specific investment in a company that presented a capability in exchange for becoming a preferred supplier. The organization saw immediate advantages within that competitive pool in terms

of decreased prices and improved performance due to new competition in the market. Previous duopolies that received all of the contracts were forced to become more competitive due to the new competition within the market.

A second area for future research would be an extension of our current research with an increased focus on obtaining additional interviews with large, private industry organizations. Using our current research as a foundational basis would allow future researchers to leverage our recommendations and conclusions as a basis for their additional research. Furthermore, researchers should allow themselves to conduct second and third interviews with the same large, private industry organizations to allow for further follow-up and additional considerations to earlier conversations.

A third area for future research would be to consider additional structural characteristics and purchasing situations that impact purchasing organizational structure. Our list of nine factors is not entirely inclusive of all characteristics of a purchasing organization. Taking into consideration less-researched characteristics may prove to close the remaining knowledge gaps.

A final area for future research is a comparison of the private sector's organization approach to category management with that of AFMC/PK. Our research indicates that AFMC/PK currently has a category management council responsible for implementing category management strategies into purchasing decisions; however, specific research into the function and effectiveness of the council would be advantageous to AFMC/PK. Future research could include analyzing the industry practices of recruiting and training category management experts as well as investing in autonomous category management systems.

While this study focused on AFMC/PK's role in procurement, the researchers identify the potential for analyzing other Air Force contracting agencies using the same methodology. AFMC represents a large conglomerate of Air Force Contracting Centers and Squadrons, however there are other organizations that contract for various products and services that should be explored as well. Applying similar methodology to other Air Force contracting organizations in comparison to private sector organizations could be an area of future research.

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APPENDIX: LIST OF INTERVIEW QUESTIONS

Where does [company name] place the purchasing function within the organizational structure? How does [company name] assign purchasing authority vertically and laterally?

How and where are the roles and responsibilities of the purchasing function written down?

- Do [company name's] policies cover all of the purchasing function's typical roles and responsibilities?
- Can you give examples of roles or responsibilities that policies do not cover explicitly?

What policies does [company name] have in place to enforce the roles and responsibilities?

How does [company name] address deviations from those policies?

Can you give examples of deviations that [company name] handles informally?

How do [company name's] policies describe upper management's role in purchasing decisions?

What written rules or guidelines are established by [company name's] highest executive level?

- How do lower levels at [company name] use these guidelines?
- What formal rules and informal practices have been established at lower levels?

How does [company name] categorize spending within the purchasing function?

How does [company name] encourage communication and relationships between functional areas and managerial tiers?

Can you describe an example of how the purchasing function in [company name] altered its structure or organizational placement to adapt to new and/or additional missions or businesses?

Can you describe an example of when [company name's] leadership utilized the purchasing function as a strategic asset in gaining a competitive edge in the market?

What factors does [company name] consider in determining the number of buyers and authorities delegated within the purchasing function?

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